

Hans Rumpf

The Bombing of Germany

Translated from the German by
EDWARD FITZGERALD

HOLT, RINEHART AND WINSTON

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Publisher's Note

THIS BOOK should be read with care. For, in the course of his study of aerial bombardment during World War II, Hans Rumpf has described in detail the horror and suffering that visited German civilians and German cities under Allied bombing attacks. But he has devoted no more than passing comment to the equally terrifying experiences inflicted by German aerial attacks on the people of London, Rotterdam, and Coventry. And he has made no mention at all of the millions who suffered and died in German concentration camps.

Some will conclude from this that Herr Rumpf, by ignoring certain large moral questions, is asking for pity where none may be deserved. The publisher most strenuously disassociates himself from any such implied conclusion.

We believe, however, that a careful and objective reading of this book will reveal it as a worth-while and instructive historical study. As a civil-defense specialist, who has devoted much of his professional life to the end of minimizing the suffering of non-military personnel in time of war, Hans Rumpf deplores unnecessary destruction of life and property, in whatever form or place it occurs. It is to the subject of aerial bombardment of non-strategic targets and its influence on the course of war that he addresses himself, as dispassionately as his experience and training will allow. Finally, it should be noted that no one with more direct exposure to the effects of concentrated mass bombing has yet appeared on the

scene to speak his piece. For these reasons, the publisher believes that this book should be read not as an attempt to choose sides and point the finger of blame but as an examination of a particular and uniquely modern phase of warfare—a phase more significant to mankind's future than to his past.

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The Bombing of Germany

CHAPTER ONE

Neither in Anger nor Indignation

WHOEVER COMES forward today – seventeen years after the thunderous explosions in Germany's towns have died away – to discuss the problems of bombing warfare is likely to be reproached for disturbing the grass which has been so carefully grown over an old scar. Have those past events any significance today? he will be asked. I think they have. I do not regard the bombing war, the way it was conducted, its origin and development, its background, its aims and its motives as an old story without interest for people today. How could it be otherwise as long as the traces of those years have not been completely effaced, so long as the scars are still visible?

Considered as an historical event, the bombing war and its significance for the future has hardly taken root in the consciousness of the peoples. Its real scope has not yet been grasped. And in particular, the complicated origin of bombing warfare behind the enemy lines – as a campaign of mass destruction, as part of a new strategic system and as a means of winning or even helping to win a great war – has remained largely uninvestigated in the background. Instead of witnessing a concentration of moral and intellectual forces against the first unrestricted bombing war, we encounter a general

disinclination to touch on an embarrassing chapter of contemporary history at all.

This unwillingness to talk openly about the bombing war was particularly marked in the victorious countries after the Second World War, and it has persisted. Most of the important war memoirs have little or nothing to say about the subject. It is almost as though there were some conspiracy of silence where the bombing war behind the lines is concerned. This is understandable enough, because, in fact, the strategic air offensive against the industrial centres and supposed nerve centres of the enemy is not one of the prouder chapters of the war, and neither side has much cause to look back with any great satisfaction on it.

Strategic air warfare declared – in defiance of the provisions of the Hague Convention which were binding on almost all the belligerent countries – that civilian objectives, even the homes of the enemy's civilian population, were lawful objects of attack. That represents an ugly blot on the general image of the Western world, and to discuss it publicly is a disagreeable, thankless task which arouses resentment; and this accounts for the general tendency to draw a veil over the bombing war. An uneasy conscience seems to have created new taboos. The Nuremberg Military Tribunal, on which a shocked world set such high hopes, ignored strategic air warfare against non-military objectives. And the hesitant beginnings of semi-official and private recording of the events shied away from any discussion of the moral and spiritual aspects of this ominous development and confined itself to the less-exacting technical and organizational aspects of the problem. Further, the question has been largely hidden away

from the public gaze in military and other specialized publications, or in official investigations whose conclusions are not readily available to a wider public.

The Americans were the first to shed their inhibitions in this respect and their detailed, though neither complete nor altogether accurate, official account, *The United States Strategic Bombing Survey*, was a valuable contribution to the history of bombing warfare in Europe. Since the German edition of this book was published, the British have also issued their official report, which is unquestionably the most important official contribution to date.

And on their part the vanquished have shown themselves almost too willing to respect the unspoken suggestion that as far as possible the grim chapter of strategic air warfare should be left in the dark. For example, so far only incomplete and isolated reports have been published in Germany, although as the country which suffered most heavily from the bombing war she is in a particularly favourable position to provide accurate information on the subject and to make a valuable contribution for the future. But, in fact, Germany still lacks an exhaustive, well-documented picture of the catastrophe which came upon her, though she needs it for her own information, and other countries have long been expecting it. What is required is a full picture which goes beyond a mere chronological record of the events to discuss cause and effect, and draw conclusions likely to be of assistance to statesmen in their future efforts to come to grips with the problem.

Some of the reasons for this extraordinary lack of interest in the tremendous events of air warfare, which, after all,

affected all sections of the population, are fairly obvious and not difficult to understand. For one thing, the profound moral and physical exhaustion left behind by three and a half terrible years of mass bombing naturally gave rise to a desire in the survivors to forget the horrors of those bombing nights as quickly as possible. And for another, the struggle for sheer existence which faced the survivors in the first post-war years gave them something more immediately important to do than contribute to a historical investigation of the first total air war. In addition, the events were thought to be too close to be a proper subject for historical investigation, and to some extent this view is still held even today. In particular many people feel that this most tremendous of all mass acts of destruction is still too near to be discussed without anger and indignation.

And as far as Germany is concerned investigation is hampered by the lack of detailed documentation; most of the records were either destroyed or taken abroad after the war, and the latter have not yet been returned. However, a very valuable part of the whole drama is still alive in the memory of those who took part, actively or passively, in the events of the bombing war. But there is an obvious and growing danger here. The generation which could fill the gap from its own highly personal experience is rapidly growing smaller in numbers and will soon have disappeared altogether.

For these various reasons the problem of non-military objectives has remained not only unsolved but even neglected. Year after year it has dragged along slowly and with difficulty behind the general discussion of air warfare in all countries. Unfortunately, the result has been that the post-war world

has come to accept, if not even approve, the modern barbarism of air warfare. People are no longer shocked at the idea of the indiscriminate bombing of civilian objectives; in fact, nowadays it is accepted as part of the generally approved deterrent strategy. And this is so despite the fact that for centuries now—largely under the influence of Christianity—we have been taught that war is a matter for men and that women and children should be spared its horrors.

Up to the present any discussion of air warfare has been largely dominated by those who would gladly efface the term bombing warfare from common usage. But any such attempt to efface the memory of a tragic but extremely instructive experience will, in the best case, repress it and drive it into a dangerous subconsciousness. Yet old resentments die, they say. One should forgive and forget. Now to forget a thing is often advisable, and one should also forgive—no matter how difficult the individual may occasionally find it—but not when the forgetting and the forgiving are inspired by a desire to avoid moral discomfort.

As far as Germany is concerned there is now a growing desire for a useful discussion of the problem of air warfare; after years of misleading and tendentious war propaganda more and more people are anxious to know in greater detail what actually happened to them during the bombing war. In fact, it is often noticeable that the memory of those past horrors is even stronger than the realization of the new and even greater dangers which the future holds. One fundamental question is being asked with increasing urgency: will the world retain the cruel weapon of bombing warfare against the civilian population, perhaps even intensify it? It is a

question to which the nuclear age that we have now entered demands an answer.

It would seem, therefore, that the time has come for us to abandon the reserve we have so far been content to practise, and that on her part Germany should now do her best to provide a reliable contribution to the history of the bombing war – even at the risk that it will be unpleasant and even painful for many people. If it is necessary for our spiritual well-being, then we must learn to face unpleasant and painful facts.

The investigation offered here is not intended to hamper the slow process of recovery which is gradually healing the wounds which bombing warfare left on both sides – and it is certainly no attempt to raise any question of guilt. Like any other such investigation, an inquiry into the history of air warfare is of more than purely historical significance; indeed, it would be useless without reference to both the present and the future. If an analysis of recent events and experiences can ever provide valuable lessons and grim warnings for the future, then it is certainly true of the first unrestricted bombing war in history.

The confusion in which the origin and principles of bombing warfare have been left has led to the idea that Germany was responsible for it, and the bombing war has been put down to an error on the part of our hybrid Luftwaffe leadership. This idea does not stand up to detailed factual investigation, though we certainly share the guilt because we failed to take a sufficiently vigorous and steadfast stand against it in the beginning. On the other hand, it would be no less wrong and foolish to attempt to burden our

chief enemy in the air, Great Britain, with the sole guilt. An objective consideration of all the circumstances will very quickly show that neither side has the right to reproach the other.

To come to the heart of the matter at once: the fact is that both sides began the bombing war against each other before either of them was in a position to estimate its strategic possibilities or to realize the brutality and mass destruction inevitably connected with it. It is possible that neither side deliberately wanted the war behind the lines, but the fact is that both sides risked it; and once it had begun it got out of hand and could no longer be stopped. Duff Cooper's terrible threat to 'pulverize' Germany's towns was matched by Hitler's no less terrible threat to 'rub out' Britain's towns. When the British Army suffered catastrophic defeat at Dunkirk, Britain had to fight for her life in a desperate situation and she saved herself only by cold-blooded heroism. It was then that bombing warfare was waged with less and less consideration until it finally became 'indiscriminate'.

Some readers of what follows may be struck by the omission of certain events and certain aspects of the subject which they regard as important; they should realize that this account is not intended to present a complete chronology of strategic air warfare as a whole – something which would require several volumes – but deliberately confines itself to the limits imposed on it by the bombing war on Germany. For this reason it does not deal, for example, with the attacks of the Luftwaffe on Warsaw, Rotterdam and Belgrade in the first phase of the war, or with the tolerant recognition of certain fortified places as 'open cities' – to which, for example,

such towns as Brussels, Paris and Bordeaux owed their immunity. For the same reason the operation which has sometimes been bitterly criticized as the first example of unrestricted bombing warfare, the attack on Coventry in November 1940 – accounts of which have, incidentally, been greatly exaggerated in the war propaganda of both sides – has also not been dealt with.

The author's main object here is to give as accurate as possible a picture of the bombing as it affected German territory; and, in addition, to provide an introduction to the military and political discussions relating to the urgently topical question of strategic air warfare as it now faces us all, both victors and vanquished. It is a matter for regret that there are no fundamental German investigations available which could serve as a basis for a more exhaustive study of the political, military, technical and psychological aspects of the problem.

It may be objected that the author has a certain point of view and cannot therefore have written this book completely without prejudice, but the truth is that no one can write effectively about a problem on which he has no opinions at all. In any case he feels he is entitled to appeal to the judgement passed in one of the more recent of the post-war political trials: 'Modern warfare affects the life of every individual with unexampled brutality. Therefore everyone has the right to express critical views on the subject. This is true in particular of publicists.'

CHAPTER TWO

Brief Preliminary

WHEN THE bombing plane became one of the weapons of modern warfare, all governments immediately began to consider the burning question of whether bombardment from the air was a lawful act of war; and from the beginning efforts were made to erect a humanitarian barrier against it. Just as towards the middle of the nineteenth century Red Cross conventions succeeded in preventing the killing of wounded men and prisoners of war, so all nations hoped that similar agreements could be arrived at which would prevent the bombing of defenceless civilian populations.

As early as 1907 Article 25 of the Hague Convention forbade any attack on undefended towns, villages, residential places or buildings by any means whatsoever. However, this prohibition was not universally adopted.

After the First World War, Article 22 of the 1922 Washington Agreement expressly prohibited any kind of bombardment from the air intended to terrorize the civilian population or to destroy private property of a non-military character.

The 'Hague Rules for Aerial Warfare' drafted by a Commission of Jurists under the auspices of the International Red Cross in 1923 were unfortunately never embodied in a Convention and ratified by the interested nations. The

Geneva Disarmament Conference in 1932 certainly declared any air attack on the civilian population to be contrary to the laws of war, but, as unfortunately we know only too well, this too remained a dead letter.

In March 1936 the German Government proposed the drafting of regulations to govern air warfare, and put forward a memorandum proposing a general prohibition of the dropping of bombs on open towns and other inhabited places, etc., but nothing came of this initiative either.

However, these repeated failures to come to any agreement on the point do not mean that between the two world wars any government seriously considered waging unrestricted bombing warfare if war ever did come. In fact there was a pretty general consensus of opinion that anything of the sort would be a common disaster which might even mean the end of European civilization; and, for example, both the British and French Governments promised that their forces would bomb only 'strictly military objectives in the narrowest sense of the term'.

In the House of Commons, replying to a question by Mr. Noel Baker on 21st June, 1938, Mr. Chamberlain, who was then Britain's Premier, said, according to *The Times* report: 'The fact was that there was no international code of law with respect to aerial warfare which was the subject of general agreement. There were certain rules of international law which had been established for sea and land warfare. These rules, or the principles which underlay them, were applicable to aerial warfare, and were not only admitted but insisted on by his Government . . .' And he went on to say: 'We can all strongly condemn any declaration on the part of anybody,

wherever it may be made, that it should be part of a deliberate policy to try to win a war by the demoralization of the civilian population through the process of bombing from the air. That is absolutely contrary to international law, and I would add that, in my opinion, it is a mistaken policy from the point of view of those who adopt it, for I do not believe that deliberate attacks upon a civilian population will ever win a war for those who make them.'

More than a year later, replying to another question in the House of Commons on 14th September, 1939, by which time war had already broken out, he declared solemnly: 'Whatever be the lengths to which others may go, His Majesty's Government will never resort to the deliberate attack on women and children, and other civilians for purposes of mere terrorism.'

These are noble words, but in other hands British policy took a different course.

A Hopeful Beginning

On 1st September, 1939, the day war broke out, the President of the United States, Franklin D. Roosevelt, sent a message to all the belligerent governments appealing to them to declare publicly that they were determined not to allow their air forces to engage in any kind of bombing attack on undefended towns or on the civilian population.

All the belligerent governments announced their unconditional agreement the very same day, and even before this message had been received Hitler had declared to the Reichs-

tag: 'I want no war against women and children, and I have given the Luftwaffe instructions to attack only military objectives.'

Hitler immediately replied to President Roosevelt's message, saying that he regarded it as a natural obligation to refrain from bombing attacks on non-military objectives, and that for his part he had already issued such instructions. 'I agree to your proposal—on condition, of course, that the enemy observes the same rules.'

The British Premier, Mr. Chamberlain, made a similar declaration in the House of Commons, and the Royal Air Force was instructed that no attacks must be flown except against military objectives 'in the narrowest sense of the term', and nothing done which might endanger civilian lives or property.

Even bombing attacks on warships anchored inshore were forbidden by both sides. For example, Hitler expressly forbade a bombing attack on the British battle cruiser *Repulse*, which was then lying immobilized in dock.

The International Committee of the Red Cross in Geneva also made prompt proposals for the humanization of air warfare, including one for the setting up of non-military safety zones and hospital areas which should be immune from attack of any kind.

The Period of Armed Reconnaissance

There was thus no shortage of hopeful declarations and well-meant efforts to curb the operations of the bomber, and the

following brief chronology of the first stage of air warfare indicates that there even seemed some hope that they might succeed.

4/9/39 R.A.F. planes open the air war with a costly daylight attack on naval objectives in Wilhelmshaven and on the Nordsee Canal. Losses were given as five Blenheims and two Wellingtons. During this attack two bombs fell in error on the Danish town of Esbjerg, destroying a house and killing two people and wounding three more. The British Government apologized and paid compensation.

✓ 5/9/39 Renewed British air attacks on naval and military objectives in Wilhelmshaven and Cuxhaven.

13/11/39 First German bombs dropped on British soil against naval and military objectives in the Shetlands.

17/11/39 Allied Supreme War Council discusses a proposal to bomb the Ruhr in the event of a German offensive in the west. The British Premier, Chamberlain, declares that in his view the plan had been carefully prepared and appeared to have a good chance of success, adding at the same time that he felt misgiving at the thought of giving the necessary orders, and hoped that it would never be necessary. The French Premier, Daladier, requested that for the time being at least the plan should be shelved.

✓ 28/11/39 Twelve R.A.F. bombers attack the German naval stations at Borkum, from which magnetic mining operations were being conducted.

✓ 3/12/39 Twenty-four British bombers attack naval objectives off Heligoland.

✓ 14/12/39 Air battle over Heligoland.

✓ 18/12/39 Air attack on Wilhelmshaven beaten off.

Up to the end of December:

Six bombing attacks on German soil against military objectives in the German Bight. Both sides undertake reconnaissance flights of up to 1,000 kilometres in the West without dropping bombs. British bomber squadrons based for tactical reasons on French soil in the neighbourhood of Reims practise similar restraint.

2/1/40 Air battle over Heligoland.

10/1/40 British bombing attack on German Air Naval Station at Sylt; two bombs fall on the Danish island of Rom.

12/1/40 First British bombs fall on the town of Westerland on Sylt.

7/3/40 British bombing attack on German armed vessels off Borkum.

16/3/40 Fourteen German bombers (Ju 88) attack the British Fleet anchored at Scapa Flow; one ship hit. Air fields and A.A. guns attacked on land. First German bombs fall on inhabited place; one civilian killed on an airfield; seven injured at Bridge of Waith, Orkneys.

19/3/40 Fifty British bombers carry out a seven-hour night attack against the Hornum airfield on the island of Sylt; twenty tons of explosives and 1,200 incendiaries dropped. Several direct hits, one on a hospital. In the House of Commons the Prime Minister describes the attack as a reprisal for the German attack three days previously.

22/4/40 The French agree in London that in the event of a German attack in the West, transport and oil targets in West Germany should be bombed.

23/4/40 Twenty-five bombs dropped on the outskirts of Westerland on the island of Sylt. Isolated bombs dropped

on Wenningstedt on the island of Sylt and on the West Holstein town of Heide.

During the winter planes of both sides frequently violated Holland's neutrality by flying over her territory, suffering losses from Dutch anti-aircraft fire. During the first months of the war, only October, November and February were free of British bombing attacks; bombs dropped on or in the neighbourhood of German towns and villages.

The belief that during the first phase of air warfare there was some sort of agreement between the belligerent powers to refrain from bombing inhabited places lacked confirmation, but without any such agreement both sides seem to have acted more or less according to the terms of the Washington Agreement. Minor infringements were ignored.

Although this laudable reserve did not prevent the ultimate outbreak of unrestricted air warfare it at least postponed it long enough to allow both sides to take what precautions they could.

The Beginning of Unrestricted Warfare

The period of mutual forbearance in bombing warfare ended with the beginning of the German offensive in the West in May 1940.

On 8th May the British War Cabinet gave the R.A.F. a free hand to attack marshalling yards, oil stores and power stations in the event of a German offensive in the West.

On 10th May the newly appointed British Premier Winston Churchill took the chair at a meeting of the War Cabinet, and

gave way to the insistence of the 'bombers' in the Cabinet who were urging him to 'take off the gloves'.

But even now indiscriminate air warfare did not break out at once, but developed hesitantly, feeling its way carefully. At first decisions were hampered by technical deficiencies in the R.A.F., anxiety caused by the superior strength of the German Luftwaffe, and perhaps moral inhibitions.

For a long time, 10th May, 1940, was regarded in Germany as the watershed between individual attacks with occasional errors in bomb-aiming, and systematic mass attacks on open towns. On that day Freiburg in Breisgau suffered its first bombing attack, which was unexpected and very severe: fifty-seven people were killed, including thirteen children in a school playground. During the war and the first post-war years no one seemed to know what actually had happened. Some believed that the French were responsible, others that it was the British. Some even believed that Hitler and Goering had ordered the bombing for deep reasons of their own. Still others believed that although German bombers had been responsible it had been an accident in the belief that they were bombing Mühlhausen in Alsace – and they were right. But the uncertainty did not finally end until after the war with the publication in 1956 of a carefully prepared report by the Institute for Contemporary History in Munich, which showed that there was now no doubt that the town had been bombed as the result of a navigational error by a squadron of two-engined German bombers.

However, the date given was not far out, for in the night from 10th–11th May, 1940 'thirty-six bombers attacked the outskirts of München-Gladbach' (*The Royal Air Force,*

1939–1945, by Richards and Saunders, 1953). Bombs were dropped on Luisenstrasse and the town centre shortly after midnight, and four people were killed, including an Englishwoman (according to information given to the author by the Town Council).

This is the raid to which J. M. Spaight, Principal Assistant Secretary to the Air Ministry, refers in his book, *Bombing Vindicated*, when he writes (p. 69): 'Our actions were taken in the teeth of strong French objection . . . This is the great date . . . not because of anything spectacular achieved immediately, but because of what was to follow in the fullness of time. In that decision of May 1940 there was implicit the doom of Germany though we little guessed it then. For a time, however, our offensive, it must be acknowledged, was a rather small affair.'

And a further passage (pp. 73–74) reads: 'We began to bomb objectives on the German mainland before the Germans began to bomb objectives on the British mainland. That is a historical fact which has been publicly admitted. . . . As it was we chose the better because the harder way. We refused to purchase immunity – immunity for a time at least – for our cities, whilst those of our friends went up in flames. We offered London as a sacrifice in the cause of freedom. . . . Retaliation was *certain* if we carried the war into Germany. There was no certainty, but there was a reasonable probability that our capital and our industrial centres would not have been attacked if we had continued to refrain from attacking those of Germany. . . . I can only put on record my own belief that she probably would not have done so, partly because it would not have suited her military book, partly

because she was afraid of the long-term consequences. She would have called a truce if she could . . . she did call one in effect, whenever she saw the ghost of a chance. It simply did not pay her, this kind of warfare.' And to put the matter beyond all doubt he writes (on p. 74): 'Because we were doubtful about the psychological effect of propagandist distortion of the truth that it was we who started the strategic bombing offensive, we have shrunk from giving our great decision of 11th May, 1940, the publicity it deserved.'

His point of view is not shared by everyone in Britain, and in his book *Towards Barbarism*, the English jurist F. J. P. Veale points out (p. 120) that: 'West Germany was, of course, as much outside the area of military operations as Patagonia. Up to that date only places within the area of military operations or such definitely military objectives as the German aerodrome on Sylt, or the British aerodrome on the Orkneys had been attacked. This raid on the night of 11th May, although in itself trivial, was an epoch-making event, since it was the first deliberate breach of the fundamental rule of civilized warfare that hostilities must only be waged against the enemy combatant forces.'

Ruthless air warfare had now begun, and thereafter there was no turning back; no stopping on the headlong path of mass death and vast destruction.

It was five months afterwards – on 7th September – after German towns had been bombed again and again, including Berlin on eight separate occasions, and all warnings had proved useless, that the German counter-attack was launched with a heavy attack on London's market and supply centres, goods depots and docks.

Thus, in addition to the burden of guilt she justly carries, Germany does not carry the further heavy burden of responsibility for the unleashing of total, unrestricted air warfare. Indeed, even her war-time enemies have never dared charge her with it; to the surprise of many it was never raised at the Nuremberg trials – and for a very good reason – and objective critics are almost unanimously in agreement that Germany had the right to act in self-defence here.

For example, in his book *Revolution in Warfare*, Liddel Hart writes (p. 72): 'The Germans were strictly justified in describing this (the attack on London) as a reprisal, especially as they had, prior to our sixth attack on Berlin announced that they would take such action if we did not stop our night-bombing of Berlin. Moreover, it must be admitted that, notwithstanding their bombing superiority, they took the initiative a few weeks later in proposing a mutual agreement that would put a stop to such city bombing. Moreover, several times they discontinued their attacks when there was a pause in the much lighter British raids, thereby showing their desire for a truce to the inter-city bombing competition. The significance of these tendencies lies in their evidence not as to German "humanism", but as to their long-term realism.'

Major-General J. F. C. Fuller writes: 'At the time, with his hands full in France, Hitler did not retaliate. Yet there can be little doubt that . . . the subsequent attacks on German cities pushed him into his assault on Britain' (*The Second World War*, p. 222).

And Liddel Hart again: 'Hitler, during the time when he had immensely superior bombing power, was remarkably reluctant to unleash it fully against his opponents' cities, and

repeatedly sought to secure a truce in city bombing during the peak days of his power. Neither we, nor the Americans, when they came into the war, were restrained by any such calculating considerations about the ultimate effects of unlimited devastation. We were dominated by the impulse to destroy Nazism whatever else was destroyed in the process' (*The Revolution in Warfare*, p. 85).

The decision to bomb towns instead of clearly military objectives can also be regarded to some extent as an act of perplexity. There was a deadlock in military operations, and the bombing was emotional rather than calculating perhaps. It was taken in order 'to get on with the war' (Air Chief Marshal Harris); in order 'to bridge the gap to the next phase of military operations as such' (Field Marshal Kesselring).

In this way both sides, trusting naïvely in the incalculable, slid more and more rapidly into a form of air warfare whose methods and aims were both morally questionable. Unrestricted bombing began before its strategic possibilities had been sufficiently studied.

CHAPTER THREE

The Strategy of Air Warfare

It is regarded nowadays almost as a matter of course that the German idea of air warfare was wrong, even fatally wrong, whilst the British idea was correct and successful. As far as Germany is concerned this opinion is prompted by disappointment with the course and the upshot of air warfare, a disappointment felt equally by soldiers and civilians alike. The first accounts of their experiences published by dejected war-time flyers, including H. J. Riekhoff's *Trumpsfoder Bluff* (1945) and W. Baumbach's *Zu Spät?* (1949), greatly contributed to this view. And there have been many similar expressions of opinion from the other side. But whoever has studied the more important recent publications dealing with air warfare will ask himself whether such simple judgements really meet the case, which is, in fact, very complicated and involved.

The chief reproach in this respect made in Germany is that her leaders were too much in favour of tactical air power and close co-operation with the Army in the field, and that in consequence they neglected plans for the waging of strategic air warfare and made no preparations for necessary defensive air strategy. In 1935 the first Chief of Staff of the Luftwaffe recommended the development of a four-engined

long-range bomber as part of Germany's general rearmament plans, and this, of course, opened up the prospect of a strategic air force. In those days it would certainly have been possible to catch up with the British in this respect. But after that, it is alleged, obtuse successors failed to recognize, or neglected, the core of modern air strategy: the establishment of air superiority in order then to launch a decisive strategic air attack behind the enemy lines. Thus, so the story goes, Germany found herself without a fleet of heavy bombers, with the result – though usually this is not said outright – that she lost the war in the air, and in the end the war itself.

As against this over-simplified contention it must be pointed out that the strategic air position from the beginning and in its subsequent development was determined by the geographical situation of the two chief opponents.

The outlook of a people in this respect is determined by whether its geographical situation is continental or inter-continental, on whether its strength is based primarily on land or sea power. Island countries are dependent on the sea; continental countries need strong armies for their defence. The newly-developed Air Force is most closely related to the Navy, and the war in the air to the war at sea.

British Developments

Where the British were concerned, air operations soon took on a nautical character, and the Air Force worked together with the Navy to keep open Britain's seaways. At the same time British aircrews were more like sailors in character, and

the repeated use in operational reports of the expression 'Captains and crews' is typical. One can easily imagine the Marshals of the Royal Air Force as admirals. On the other hand the commanders of the Luftwaffe were called Field Marshals – and most of them actually had been Field Marshals even before they were transferred to the Luftwaffe.

British tradition favoured an independent strategic air force with relatively few men and a highly-developed technical organization. In this way, it was hoped, losses could be kept down, whilst at the same time an attempt to force a strategic decision would be possible. In traditional British song and story the men who fell at Trafalgar were the nation's great heroes. The 185 men who lost their lives in that decisive naval battle achieved more for their country than the 800,000 men who lost their lives in the battles of attrition in France and Flanders during the First World War. The typical British view was always that a war should be fought if possible with limited liabilities.

But in those early days, of course, no one could foresee that during the Second World War the R.A.F. would lose 79,281 dead—Bomber Command alone had 44,000 dead, 22,000 wounded and 11,000 missing—in other words, that R.A.F. losses would be greater than those of the Army during the invasion and reconquest of Europe. These terrible losses have earned those responsible the reproach that their bombing war was 'the clumsiest, most brutal and most wasteful of all forms of warfare' (Captain Cyril Falls) and 'the most uncivilized method of warfare the world has known since the Mongol devastations' (Liddel Hart).

Although she definitely favoured a strategic bombing war,

Britain did not neglect her air defences; in fact at first she even gave them priority. At the beginning of the war, Fighter Command, which was of such importance for the air defence of the island, was certainly not weaker than the Luftwaffe fighter command – in fact, the latest information suggests that it was probably even stronger. In any case, it was thoroughly prepared to deal with the enemy attack when it came, whereas at the same period Bomber Command was complaining bitterly that it had ‘no flesh on its bones’.

From 1935 on the development of a four-engined bomber was encouraged, a bomber which was to stop the heart of Germany’s industry beating. Seven years passed before the authorities were satisfied that they had what they wanted: and the first high-performance Halifax and Lancaster bombers became operational in 1942. Despite its comparatively small size, the Lancaster could carry nine tons of bombs without its performance deteriorating, and ‘no other bomber in the world could equal that’. Before then Britain had no bomber capable of doing Germany any serious damage.

The chief of British Bomber Command demanded 4,000 of these high-performance heavy bombers, and, in addition, a thousand fast bombers of the Mosquito type so that Bomber Command could operate over Germany day and night. Later on, at a critical state of the war, he demanded even more: ‘30,000 bombers – and the war would be over tomorrow.’

But even the more modest request could have been met, if at all, only at the expense of other arms. In actual fact the preliminary air offensive against Germany’s towns was opened in the spring of 1942 with only 69 heavy bombers. At the height of the main offensive in the autumn of 1943

there were 1,120 heavy bombers and 100 fast light bombers available. But by that time there were also approximately 1,000 Flying Fortresses of the United States Air Force in support.

Germany’s ‘Land Air Power’

As we have seen, Britain worked consistently to make the R.A.F., which had been an independent arm since 1918, into a pure air force; Germany, on the other hand, tended more to the creation of a ‘land air force’, designed for close co-operation with the Army in the field. Russian and French views on the subject were more closely related to the German view. All evidence goes to show that Hitler and his generals thought primarily in terms of land warfare. In peace-time air power was to serve as a means of exerting foreign-political pressure; in war-time its main aim was to provide close support for ‘blitz’ methods on land.

This is the background against which those responsible for Germany’s air policy were reproached with adopting a ‘wrong’ conception of air warfare, which allegedly made them attach exaggerated importance to the dive-bomber – the two-engined medium bomber was also built as a quasi dive-bomber – whilst at the same time underestimating the importance of the long-range heavy bomber.

But the German conception of war was not based on defence, and Hitler’s ideas certainly were not. From the beginning therefore the purpose of the Luftwaffe was offensive, in fact the bomber was known as a ‘battle plane’ – and yet no

decisive operative offensive operations were ever undertaken. This is something which will always remain a puzzle. Hitler and Goering were not interested in fighters; they wanted bombers; and yet never did they ever develop a really effective long-range bomber. The choices at their disposal were: (a) the heavy, armoured, slow, four-engined bomber with a crew of between seven and ten and a high fuel consumption; (b) the faster, two-engined, medium lightly-armoured bomber with a crew of three or four, carrying a bomb load of between 500 and 1,000 kilograms;* (c) a single- or double-seater fast bomber, if possible superior in speed to a fighter plane.

There were differences of opinion as to whether the dive-bomber or the horizontal bomber had the better flying qualities and therefore the better prospects in air warfare, and also as to range, speed, ceiling, and landing and take-off speeds. We don't know for certain even now why in the end a long-range bomber force was never built; the whys and the wherefores are still being hotly discussed. In fact there is no pass key to the solution of this technical mystery of the war.

The preliminary conditions for air armaments were quite different in Britain and Germany, and as far as Germany is concerned one must not forget the handicap represented by a fifteen-year-interval of what was practically total disarmament. Further, her air rearmament took place far more hurriedly than her rearmament on land and sea. In addition, just at that time technique was in a period of very rapid development. When the prototype of a war plane was at last

* A kilogram is approximately 2.2 lb. Trs.

ready to go into production after years of development it was often already obsolescent. In a situation of such swift technical advance the decisions of even the most shrewd and experienced experts could easily turn out to be wrong.

Points that required careful preliminary consideration in Germany were already settled in Britain, where the prototypes of the strategic long-range bomber were already in the test-flight stage and ready to go into production in the near future. The situation in the United States was equally favourable. In both countries the development of the strategic long-range bomber was going forward under a cloak of secrecy.

In Germany the disadvantages of a long period of disarmament, during which it was forbidden to build military planes at all, proved greater than the advantages of being able to begin again from scratch. The situation would have been different if it had been possible to build up the Luftwaffe steadily and not under constant pressure, but Goering and his staff were too impatient to wait until the fundamental technical and organizational questions had first been satisfactorily answered. This impatience, and the nervousness and anxiety caused by the prevailing uncertainty reflected an inner feeling of insecurity – the fear that if they wasted too much time Britain might catch them napping.

Hitler was a layman in air matters and completely dependent on the judgement of his experts: Goering, Udet and Jeschonnek, who had been outstanding fighter-pilots as young men in the First World War but who had since, as politicians and statesmen, had neither time nor opportunity to obtain a solid basis of air-strategic knowledge. Goering's Air Ministry had seven departmental chiefs of whom four were army

officers with no experience at all of air matters. It is quite obvious that such people were simply not in a position to judge the character of modern air power with the more experienced eye of the British Air Ministry.

It seems very likely that Hitler was really afraid of the prospect of total air warfare, and that he already had some idea of its consequences. This explains the alacrity with which he seized on the idea, new in 1936, of establishing protected zones, and also his repeated attempts to end large-scale bombing. Such efforts were, of course, calculating, but they were nevertheless quite genuine. His last efforts to end the air terror, which was then already gathering momentum, were made in the summer of 1940 when his army was in a favourable position, occupying the Channel ports. He was anxious to get his method of waging war adopted as against the British method of strategic air warfare. When he failed in this the air policy of the two countries diverged more and more until in the end Germany had no strategic air weapon and Britain had no tactical air arm. And during the war, because of armament techniques, it was no longer possible for either to make up the lost ground. For Germany there were two reasons in particular: first of all the ruinous campaign in Russia now greedily devoured armament production; and, secondly, later on, the necessity of self-defence made the production of fighter planes a matter of increasing urgency.

There are critics in the other camp who regard the neglect to build up a powerful British tactical air arm as just as great an error as the German failure to build up a long-range heavy bomber force to attack factories and the morale of the enemy as a necessary part of the economic and industrial war, and

which at the same time would have been capable of carrying out any necessary reprisals.

From the very beginning Hitler regarded the Luftwaffe as a weapon for exerting foreign-political pressure, even blackmail; and, as the example of Prague shows very clearly, it was at first used very successfully for this purpose. On the other hand, the propaganda aspect of the Luftwaffe was so overdone that big disappointments were inevitable; for example, Goering's famous air barrier in the West, through which allegedly not a single enemy plane would succeed in passing. Both at home and abroad German propaganda worked ceaselessly to create the idea that the Luftwaffe was so much stronger than anything other countries could put up that it was invincible. And, as always in propaganda, great play was made with numbers. This too operated against the long-range heavy bomber, because efforts were concentrated almost exclusively on obtaining imposing production figures for aircraft.

At that time Udet exercised the biggest influence on Germany's technical air policy, and his views were very decided: 'We don't need the expensive heavy bomber; it demands an excessive amount of material by comparison with the two-engined dive-bomber.'

Perhaps here lies the key to the 'failure' of the Luftwaffe? Perhaps Germany just couldn't afford a powerful strategic air force as well, simply because she lacked raw materials, production strength and adequate supplies of fuel. She had to exercise economy – certainly not in money, and vast sums were spent on the Luftwaffe, but in raw materials, such as aluminium, and high-octane fuel. In this respect neither Germany nor Britain had unlimited resources.

In the upshot the lightly armoured JU-88 was produced; for those days it was fast, but not fast enough to escape the high-quality fighters of the R.A.F. However, the numerical advantage of this building programme was that three short-range bombers could be produced for one long-range heavy bomber.

During the war Germany produced about 100,000 planes, against Britain's 110,400. However, it must not be forgotten that Germany produced 41,700 tanks against Britain's 26,000. Both Hitler and Goering pretended to dismiss the tremendous productive force of the United States, as unimportant, but they can hardly have been serious, because during the First World War both of them had had very good reason to know what effect U.S. production had on the course of the war. During the Second World War 27,000 heavy bombers and 5,000,000 high-explosive bombs were produced in Detroit alone.

The Lessons of The Battle of Britain

As we know now, those responsible for Germany's air policy did not deliberately abandon the development of a powerful long-range, heavy-bomber force, but merely postponed it as a task to be performed at a later date. In consequence everything was now concentrated on the production of dive-bombers and medium-range bombers for use as army co-operation weapons, with the result that Germany developed what was at that time the most powerful tactical air force in the world. The idea was to make up for the lack of a strategic

air force by occupying such a large area of enemy territory that it would be impossible for him to wage any serious air war against the Reich itself. In accordance with this basic idea the Luftwaffe was now built up exclusively in order to support the Army in the field. The Luftwaffe was organized into so-called air fleets, each of which had squadrons of medium bombers for limited operative tasks, but they were not capable of waging a long-range bombing offensive over a protracted period. As the United States strategic survey of the bombing war in Europe concludes, probably accurately, this form of air warfare was completely successful. The Luftwaffe's first defeat came in the Battle of Britain. Even then Germany's leaders were not greatly cast down by this set-back; they were confident that once Russia had been defeated they would have plenty of time to deal with Britain – once and for all this time.

Addressing the Reich's Defence Commission on 8th November, 1943, Goering declared rather pathetically in his own defence: 'At the beginning of the war Germany was the only country which possessed an operative air force consisting of high-quality planes.' There was something to be said for this, but the confusion which reigned in his mind in questions of air strategy became apparent when he went on to say: 'At that time all other countries split up their air power between their armies and their navies, and planes were regarded as mere auxiliary weapons. For this reason they lacked a weapon with which they could deliver concentrated attacks: an operative air force. But in Germany we had worked from the start along such lines. The main weight of our air force was so organized that it could strike deep into

enemy territory and obtain strategic results; though, of course, a small proportion of our Stukas, and, naturally, our fighters, also operated on the battlefields.'

With considerable qualification, this version may have been more or less true of the first months of the war when the weak and obsolescent air force of Poland, and the unprepared air force of France were caught napping and largely destroyed on their own air fields. But it ignores the facts, or turns them into their opposite, where the Battle of Britain is concerned: the equally high-quality R.A.F. called the Luftwaffe's bluff. It was then very quickly seen that neither as a weapon nor in its conception was the Luftwaffe capable of coping with the strategic air war which was now opening up. The sort of air war Germany's leaders had in mind in the autumn of 1940 bore little resemblance to the real thing. Everything turned out to be different and uncertain. There was no practical experience to go on, particularly in technical matters. Goering's 'operative air force' now experienced helter-skelter a chaotic series of main and subsidiary phases of the air war; sometimes it was used hesitantly and gropingly in medium-scale operations, and at others it was hurled recklessly into large-scale operations against objectives which changed too frequently – at first in daylight, and then under cover of darkness. After five turbulent months involving excessively heavy losses came the political decision to launch an attack on Russia, and the necessary preparations compelled the Luftwaffe first to reduce its attack on Britain and finally to abandon the campaign altogether.

For a time public opinion in Germany was still deceived and unable to form a true picture of what had happened. It

had no idea of the excessive strain which the Battle of Britain had imposed from the very beginning on all aircrews and ground staff. In fact the objectives of the attack on Britain – command of the air and decisive strategic results against the industrial and administrative centres – had proved far too ambitious; the technical means available were just inadequate. Not only this, but the Luftwaffe was never to be in a position to use the experience it had paid for so heavily because there was no further opportunity for conducting large-scale operations. But later on the R.A.F. was to make good use of the experience.

The truth is that even if the leaders of the Luftwaffe had all been geniuses, the technical means available at the time were just not adequate to obtain decisive results and influence the course of the war. We know now that the twenty to thirty times greater air effort the Allies exerted in their bombing attacks on Germany was still not sufficient to have a decisive effect on her armament production – this effect was obtained only right towards the end of the war when the Allies held undisputed command of the air and could launch systematic precision bombing attacks on chosen targets in the key industries: ball-bearing works, aircraft factories, synthetic-oil plant, and so on, coupled with crippling attacks on road and rail traffic. It is therefore not surprising to discover that even the most desperate efforts of the Luftwaffe in those early days were quite inadequate, or that the results actually obtained lagged far behind the vague expectations. The fact is that when the Luftwaffe was given its hardest task it was far too inexperienced – it was less than five years old! – even to know how to go about it properly.

Public opinion in Germany is still inclined to blame the lack of a German strategic air force for the catastrophic situation which developed towards the end of the war. But as the United States Strategic Bombing Survey points out, though Hitler certainly included a highly-developed air force in his general plans he did not attach sufficient importance to destroying the enemy's war economy at its source by bombing. And the reason for this was that Germany's war plans aimed to overrun enemy territory so quickly that there would be no need to pay any particular attention to enemy war production.

Air Chief Marshal Harris writes in his book: *Bomber Offensive*, p. 86. 'They (the Germans) had, in fact, no strategic bombers at all, since their whole force of over a thousand bombers was designed for army co-operation work, and was only used for attack on cities when not required to support the German Army. Even in daytime it was fitted only to carry out the work of a tactical air force, not strategic attack.'

Professor Blackett, the physicist and winner of the Nobel Prize, writes in his book *The Military and Political Consequences of Atomic Energy*: 'There is ample evidence that the German Air Force was designed primarily to fill a tactical role, and in particular for close co-operation with land forces . . . it thus came about that, except for the destruction of parts of Warsaw, Rotterdam and Belgrade by air operations close ahead of their troops, the German advance over Europe took place without indiscriminate attacks on cities.'

Spaight puts this attitude down to a lack of understanding – indeed, he is generally inclined to believe that Germans are stupid. 'The Germans never understood the air,' he says

smugly. In this respect Lord Tedder agrees with him: 'They (the Germans) failed to understand air power even more completely than they failed as regards sea power' (*Air Power in War*, p. 45). Most, but, as we shall see, not all people in the victorious countries seem to share this view. And even in Germany today there are those who reproach the leaders of the Luftwaffe in retrospect because none of them was 'an air strategist of Moltke format'. The reference here is to the great German 'railway strategist', a man for whom 'technical progress was a welcome means to wage wars swiftly and victoriously'.

It is not difficult to realize that this comparison is of very doubtful validity. At the outbreak of the Franco-Prussian War in 1870 the railway network in both countries was already quite highly developed so that one could really speak of 'the first railway war in history'. But bombing on any scale developed only during the course of the Second World War; and the only really effective strategic air supply line in operational existence (from West Africa to Egypt) was really quite exceptional.

Such over-hasty criticism only shows once more how much easier it is to form a snap judgement than to determine the facts of the case. When a real attempt is made to do the latter, then the resultant judgement is much more objective, as witness Professor Blackett, who considers what might have happened if Germany had turned a large part of her war industry to the building of a long-range bomber force:

'It is clear that up to the time when France capitulated, such a change of policy on the part of Germany would have

been detrimental to the German campaigns. On the one hand such a diversion would have been at the expense of the brilliantly effective co-operation between the German Army and Air Force; and, on the other, it would have led to no compensating advantage, as the campaigns in Poland, France, the Netherlands and Norway were far too quickly won for strategic bombing to be necessary or useful. . . . If Hitler had built more long-range bombers and fewer fighters he would have been still less able to invade England in 1940' (pp. 27-28).

Of course, in view of the terrible devastation that took place in the heart of Europe there were many people in Germany who regretted the lack of a really powerful reprisal force which might perhaps have compelled 'the Bombers' to think again. But, one way or the other, there were many attempts in Germany to build a really efficient heavy bomber, but for some reason or other they all failed. The few long-distance four-engined planes which were actually produced were quickly used up in the great battles of attrition in the East, or were shot down on long-range reconnaissance over the Atlantic. The light 'Blitz bomber', which had been Hitler's wish-dream for years, came too late to be of much use; and one of the chief reasons for this was that his earlier disappointments had made him suspicious and distrustful, and now caused him to enter the field as a designer himself. A heavy bomber, the Heinkel 177, was developed between 1942 and 1944. This plane was of unusual design, having four tandem-coupled engines. However, it never got over its teething troubles and in the end it had to be scrapped. If it is true, as has been reported, that it was not scrapped until

after 1,146 had been built, then this was a real back-room disaster for Germany.

But much more important than the lack of an effective strategic bomber force was the lack of preparations for a really effective strategic air defence, though with the raw materials available this would have been an altogether easier task. And when a numerically powerful fighter force was finally ready in the summer of 1944 it was practically grounded for want of aviation spirit and trained pilots.

On the other hand, it is quite true that the leaders of the Luftwaffe were often very vague as to their aims; and that organization, equipment and operational planning often left a great deal to be desired – before they finally broke down altogether. Germany's war industry was never strong enough to meet all the demands of the Luftwaffe in full, and judgments such as those implied in sensational book titles such as *Trump or Bluff?* and *Too Late!* by H. J. Rieckhoff and W. Baumbach respectively, give a distorted picture of the situation. 'Too Weak!' would fit the situation much more accurately. And those who bear the responsibility for this are the men who launched the war in 1939.

The Turning Point in the Air War 1941: The Calm Before the Storm

FROM THE beginning of the attack on Russia to the end of 1941 there were, according to German records, 109 R.A.F. attacks on German territory. According to official British sources, sixty-seven industrial and forty-one transport targets in West Germany were attacked in this period. The effect of these not very systematic night attacks was tremendously exaggerated in Britain, and the authorities, misled by their own war propaganda, even suggested that industrial production in the Ruhr had dropped by twenty per cent in consequence. In reality the effect of these raids on production was practically nil and, in any case, well below one per cent. At that time too, about forty per cent of Britain's bomber force was active on behalf of the Navy.

The year 1941 saw nothing of much importance happening in the air war. Apart from one or two nuisance raids by the Luftwaffe the air attack on Britain had practically ceased. All Germany's available bombers were in the East and the Mediterranean. In the autumn of this year Hitler issued one of his many foolish orders; this one forbade all work on air projects which did not promise to become operational within twelve months.

In the meantime Britain worked steadily and systematically to build up a strategic bombing force, and she made slow but steady progress. The number of heavy bombers available rose from 41 to 539, but there was still a shortage of well-trained crews.

In March 1941 President Roosevelt ordered his Air Chief General Arnold to build a force of long-range heavy bombers — 5,000 planes were already being built, and the estimates for 1942 provided for a further 5,000. At the same time 12,000 men were being trained as pilots.

1942: Preliminary British Offensive

Two things made 1942 the decisive turning point in the air war: (a) the decision taken on 14th February by the British War Cabinet to launch an 'intensive air offensive' against Germany's towns to last for a preliminary period of six months; and (b) the appointment of Air Marshal Harris as Chief of Bomber Command.

Both these facts and dates are important because they represent the first official decision to launch 'area bombing', that is to say, indiscriminate bombing without any particular target. The idea was now to cripple Germany's armament industry by destroying the homes of its workmen. This form of area bombing under cover of darkness from a great height was now adopted as the standard method of attack, and for the next two years it remained the gospel of British bombing policy.

The scale of these operations was extended when on

22nd February the British War Cabinet sanctioned bombing attacks on towns in Western Europe occupied by the German Army. And with the appointment of Air Chief Marshal Harris to carry out this policy the War Cabinet found a ruthless protagonist of a merciless method of waging the war in the air. 'Harris brooding over the future, sought to apply, even before the scientists had provided him with the necessary instruments, methods of warfare which threaten the very existence of civilization' (p. 131). For him every town was an industrial town, and 'In this frame of mind, and with a calculated determination to resist all unnecessary diversions to other ends, Harris embraced his new task' (Richards and Saunders, *The R.A.F., 1939-1945*, p. 119).

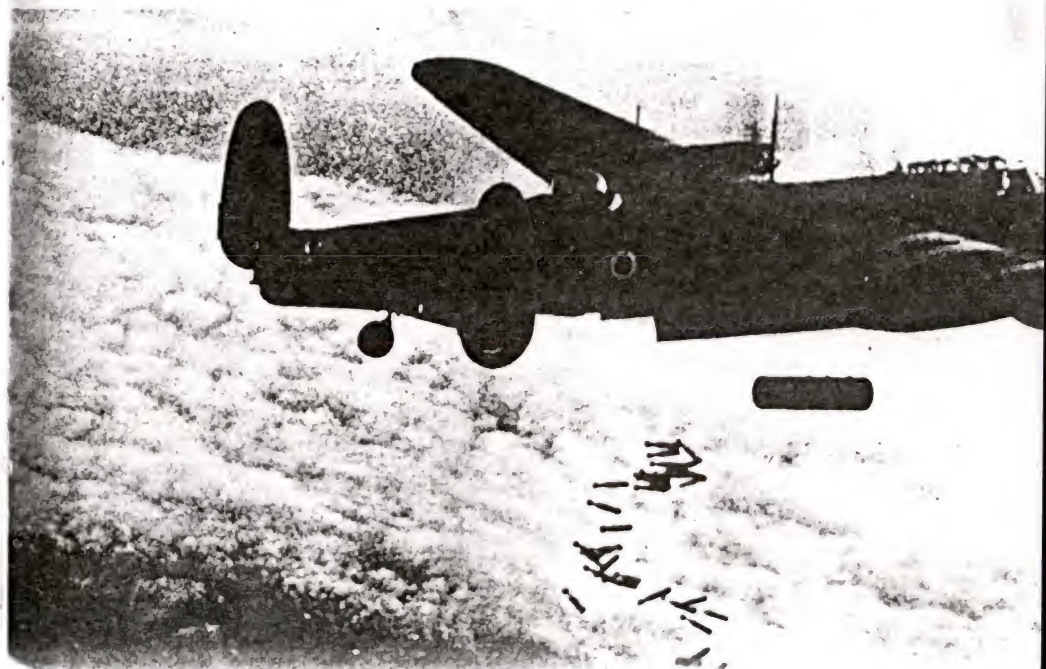
Under his forceful leadership systematic large-scale destruction by area bombing now began, and by the end of April the first part of the project had been completed. In this period sixty per cent of the total bomb load was concentrated on the attacked towns. At the same time work on the development of wireless and radar devices for night bombing was pushed forward with great energy.

The attack on Lübeck in the night from 28th-29th March, 1942, is regarded in international air-war literature as the historical watershed of the bombing war. It was the real beginning of 'area bombing' with 'barnyard-door' targets; in other words, with no targets at all except Germany's towns as such. This raid also marked a stage in the use of incendiaries, which were now dropped in large numbers with the deliberate intention of causing conflagrations in heavily-built-up residential areas, preferably in the older quarters where the danger of fire was greatest.



An R.A.F. Lancaster bomber being prepared for a raid.

A block-buster and smaller bombs being dropped on Duisburg.



The Destruction of Lübeck

Lübeck was the first German town to go up in flames. It proved the first step in a round dance of death which was to embrace one German town after another.

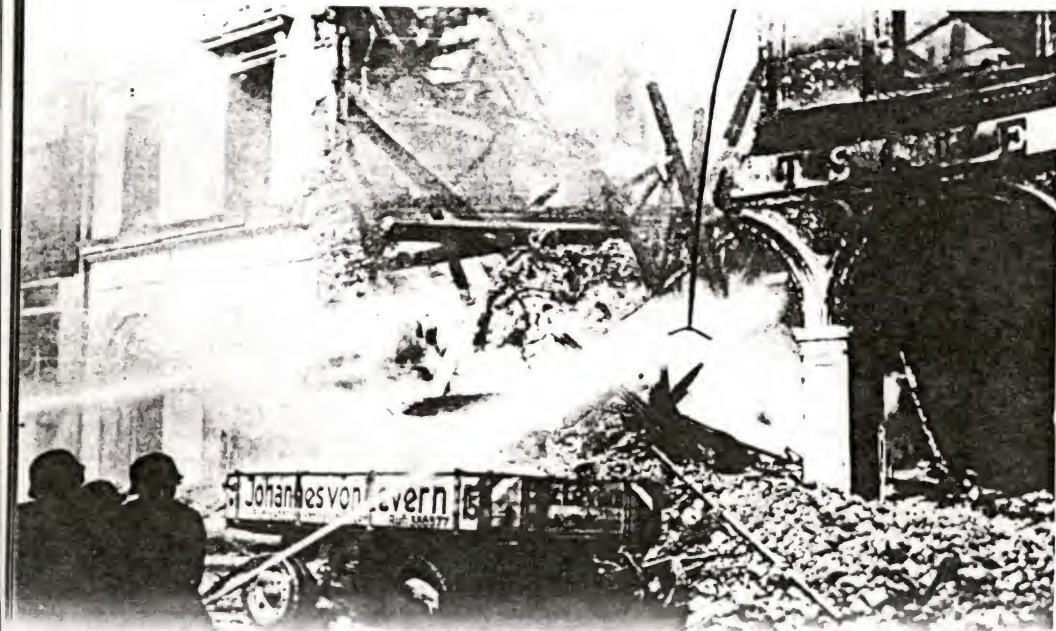
Lübeck was also the first really tangible success achieved by British Bomber Command. Its leaders had worked hard for it, and they needed it to support their case. At the same time it was the first great failure of Germany's air defences, and thereafter they never showed themselves capable of adequately protecting any threatened town.

Why was Lübeck chosen as the objective of this first new-style attack? It was not an important centre of Germany's war industry, as Essen was, for example, but an old Hanseatic port with very many lovely old medieval houses. Why then? Macmillan gives us the answer in *The R.A.F. in the World War* (Vol. IV, p. 87): 'The city chosen for the first big experiment was Lübeck. . . . The old part of the city that was the target area was almost completely islanded. It was therefore a comparatively simple matter to assess accurately the scale of damage. The official booklets published on the work of Bomber Command state that accumulated supplies intended for the Russian front were destroyed. This is, of course, true. But their destruction was less important than the measurement of the Command's destructive power against a built-up area created by nature and man so very favourably for the purpose. To that extent the attack on Lübeck appears to have been more a terror raid than one with a well-defined military purpose.'

Rescue teams labour among the ruins after an attack on Eppendorferbaum.



German firemen fight to control fires caused by incendiary bombs.



Seen from the German angle the historical facts of this first terror raid on a whole town are briefly as follows: in the bright moonlit night from 28th–29th March, 1942, British bomber squadrons flew in to Lübeck from over the Baltic. The attack began at midnight and continued in several waves for three hours. In addition to the already well-known stick-type incendiaries, liquid incendiary bombs were used for the first time.

The town was not heavily defended, but the attack did not take it altogether by surprise so far as the experience and knowledge of the civil defence organization was developed at that time. Nevertheless, human, material and artistic losses were very high – 320 people were killed and 785 injured; 1,044 houses were destroyed and 4,200 seriously damaged. Twenty-five public buildings were also destroyed, and many things of great beauty and historical value were lost.

Amongst the many sad architectural losses was Lübeck cathedral, built in 1173 by Henry the Lion; the lovely Marienkirche, the mother church of the German North; the medieval salt-house, the ancient Petri Church, the Municipal Museum with its art treasures, and many old Hanseatic patrician houses, including the famous Schabbelhäus and the house of the 'Buddenbrooks' made famous in Thomas Mann's novel of the same name. The unique and beautiful Rathaus, one of the finest in Germany, was hit and seriously damaged by fire.

There were no further attacks. After thirty-two hours of combined activity by all the rescue services the fires were extinguished. The Swiss diplomat C. Burckhard, who was President of the Red Cross at the time, secured an under-

taking from the British that no further attacks would be made on the town, whose port was then handling the major shipments of the Red Cross.

The most important lesson of this experimental attack as far as the aggressor was concerned was the discovery that the effectiveness of the incendiary was clearly superior to that of the ordinary high-explosive bomb.

Otherwise the practical results of the attack completely confirmed the theoretical predictions.

It is not so well known that in its inability to defend Germany's towns from such destructive attacks the Luftwaffe now ineffectively adopted a policy of reprisal attacks on similar enemy towns in an attempt to prevent further area bombing. This attempt, carried out with insufficient forces by a Luftwaffe which was stretched to the limit by the demands being placed on it elsewhere, became known in air-war literature as 'Baedeker attacks', that is to say, reprisal attacks carried out against weakly defended cathedral towns of no military importance.

As a reprisal for Lübeck the old English seaside town of Exeter was chosen as the target, and in the night from 24th–25th April, 1942, an attack was launched by twenty-five planes. There were eighty dead and fifty-five injured, and 6,000 houses were destroyed or damaged. This counter attack did not achieve its object, and in the following phase of the full moon the next blow fell on the Baltic seaside town of Rostock, and it was hardly less severe than the attack on Lübeck.

During the further course of these 'Baedeker attacks' Exeter was again chosen for a new reprisal raid, this time with stronger forces. It was carried out by ninety bombers

specially withdrawn from the front line for the purpose. An area conflagration destroyed or seriously damaged 2,000 houses. Nine churches were hit; 163 people were killed and 131 injured. According to British sources this was 'the worst destruction suffered by the town since the Danish incursion in 1003'.

Rostock 24th—27th April, 1942

This time the attacking bombers, again flying in from over the Baltic, adopted new tactics. On four nights in succession they made swift attacks on the Heinkel and Arado aircraft factories, but, and above all, they indiscriminately attacked the inner town — 468 out of the 521 bombers engaged reached their objectives and dropped 442 tons of high-explosive bombs and 305 tons of incendiaries. The material damage was greater than in Lübeck, and 1,765 houses were destroyed and 513 seriously damaged. Sixty per cent of the built-up area of the inner town was destroyed by fire.

Here too the loss of ancient monuments and art treasures of great cultural value was heavy and deeply deplorable. The town's three main churches with their high spires and steep roofs, a number of the old town-gates and many gabled old patrician houses were destroyed. As in Lübeck, the beautiful town silhouette, which had remained unchanged for centuries, was destroyed in a single night of flames and high-explosives. This was perhaps the most difficult thing to grasp when you approached a familiar town after it had been attacked: the old silhouette on the horizon was just no longer

there. By comparison with such an irreplaceable loss what did the destruction of more modern buildings matter; the theatres, the banks, the schools, the institutional buildings and the commercial centres?

This new success did not cost Bomber Command a great deal either: just twelve bombers, or 2.3 per cent of the total attacking force. Four nights in succession the bombers concentrated their attacks on the town centre, which was closely built up and thickly populated. Official German reports on this raid used the expression 'terror raid' for the first time, henceforth it was to become the accepted expression in international air-war literature. All embarrassed attempts to suppress it have been without success down to this day.

As reprisal target for the attack on Rostock the famous Regency town, Bath, in the West Country was chosen. Two attacks were flown in the nights 25th—26th April and 26th—27th April respectively, with the following doubtful results: a good deal of damage was done to historic buildings and Regency houses, 400 people were killed and as many injured, and the work of the firemen was hampered by lack of water and low-flying attacks. In the two following nights the old provincial town of Norwich was attacked.

These reprisal raids, whose effects were greatly exaggerated in propagandistically coloured reports, strengthened the impression that the bombing war had now gone into a nose-dive in a hopelessly vicious circle from which it could no longer extricate itself. However, that this was not altogether so was demonstrated a little later by the complete abandonment by the Luftwaffe (admittedly not altogether voluntarily) of reprisal raids. But at least the British could

then hardly make their rapidly growing offensive against Germany's towns plausible as reprisal raids. However, Air Marshal Harris had the following disconcerting observation to make on the point: 'These two attacks, against Rostock and Lübeck, brought the total acreage of devastation by bombing in Germany up to 780 acres, and in regard to bombing about squared our account.'

Cologne—the First 1,000 Bomber Attack

A new form of attack, which had previously been thought impossible, area bombing on the grand scale, was first carried out in the night of 30th–31st May, 1942, against Cologne. The plan for this demonstrative giant attack, which demanded tremendous preparation, had many opponents, who felt that to jump suddenly from 228, which was the biggest concentration of planes so far, to 'a thousand-bomber raid' was setting the sights too high and running too great a risk. But Harris, the Chief of Bomber Command, had his way and all resistance was overcome. In order to stage this giant raid he had to use not only all his own available bombers but also every machine he could borrow from Coastal Command and the Royal Naval Air Arm down to the last training machine capable of carrying a bomb.

The very considerable achievement represented by getting such a large number of planes into action organizationally and navigationally was made possible only with the aid of a new technique of wireless navigation. Flying in uninterruptedly, squadron after squadron unloaded its bombs over an area of the town marked off by floating flares released before

the attack by pathfinder planes. Although Churchill reckoned with the loss of at least a hundred planes he gave his consent to the undertaking. Three towns had been chosen as possible targets, Cologne, Essen and Hamburg, and it was only at the last moment, on the basis of favourable weather reports, that the centre of Cologne was decided on.

One thousand and forty-seven planes took off from fifty-two airfields, and within the space of ninety minutes, 900 of them dropped 1,455 tons of bombs, two-thirds of them incendiaries. The remaining planes bombed anti-aircraft positions and night-fighter airfields. The cost of the raid to the attackers was only thirty-nine planes, or 3.3 per cent of the total force engaged.

In the same night Harris, who had staked everything on this one card, put a long-distance call through to Churchill, who was in Washington at the time, to inform him of the unexpectedly great success of the undertaking. With this giant attack Harris seemed definitely to have established his point that strategic bombing could have a decisive effect on the outcome of the war.

At this stage of the war Cologne, which was then the third largest city in Germany, was not altogether unprepared. Like many other West-German towns it had been raided frequently, having experienced 268 alerts and 107 actual raids. Since January 1942 there had been twenty-seven alerts and eight raids, all of them either small or of medium size. But this time a veritable hail of bombs descended on the closely built-up inner town, and the total weight of bombs dropped was at least four times as great as anything which had gone before. The destruction and loss of life was correspondingly high.

Four hundred and sixty people lost their lives, and the total would certainly have been higher but for the fact that by this time the citizens of Cologne had had a good deal of experience and their civil-defence discipline was high – 45,000 people lost their homes, and the night of terror caused a mass of fugitives to surge out of the town.

The material damage was greater than it had been in Lübeck and Rostock put together. A total of 12,000 fires was started, and 1,700 of them developed into local conflagrations. According to British estimates the damage was six times as great as that which had been done a year before by Luftwaffe planes in their attacks on London.

In Germany it was at first assumed that the Americans must have taken part in the giant raid, and when this supposition was not confirmed there was some consternation, and it was made even greater when only twenty-six hours later an equally vast raid took place on Essen, and three weeks later another one on Bremen.

The 'reprisal campaign' ended for good and all with two small 'Baedeker' raids, one on Canterbury on 31st May and the other on York on 31st October, 'for Cologne and Mainz respectively'. The Luftwaffe had been so reduced by two hard years on the Russian front that it was just no longer capable of mounting effective reprisal raids.

The Luftwaffe devoted the remainder of the year to improving the quality and increasing the strength of its already quite formidable night-fighter arm. At the same time the Plans Branch of the R.A.F. made careful preparations for the main bombing offensive of the forthcoming year, which was to destroy fifty chosen German towns.

The Air Balance of 1942

However, Britain's air-war objectives had been too ambitious, and they had not been attained. Growing losses (5.6 per cent) could not be currently made good. Unfavourable weather and, in particular, low visibility and thick cloud cover, added to subsidiary but necessary tasks of various kinds, had prevented the full concentration of all available bomber forces on Germany's towns. The balance of the preliminary offensive at the close of the year was therefore not particularly encouraging. Approximately one hundred missions had been flown, seventeen of them very big raids indeed, each of which had unloaded more than five hundred tons of bombs on their objectives. Sometimes losses had been fairly low, or at least tolerable, but generally speaking they were felt to have been too high. For every forty tons of bombs dropped a four-engined bomber had been lost. Churchill wrote: 'Although Bomber Command believed they had found the target, two-thirds of the crews actually failed to strike within five miles of it. The air photographs showed how little damage was being done. . . . Unless we could improve on this there did not seem much use in continuing night bombing' (*The Second World War*, Vol. IV, p. 250).

Throughout the year Bomber Command had remained inferior in strength to Fighter and Coastal Commands. However, under the forceful leadership of Air Marshal Harris, good progress was now made in the development of a force of long-range heavy bombers, and from time to time the project was given priority in armament production.

But the disappointment felt at the general unsatisfactory

result of the year's work is expressed by Churchill very frankly: 'Although accurate night-bombing, denied so long . . . came gradually into being, the bomber offensive of 1942 did not lower Germany's war production or civilian morale. The strength of her economy had been underestimated' (*The Second World War*, Vol. V, p. 457).

However, Air Marshal Harris himself was still optimistic and he recorded that 1942 had been more a year of preparation, and that although it had not done the enemy much harm it had strengthened his conviction that Britain could defeat her enemy with the bomber weapon.

For Germany the bitterest and most disconcerting experience of the year was the discovery that despite Goering's boasts and the utmost efforts of the Luftwaffe to make them good, it was unable to defend West Germany effectively against these bombing attacks – and that even in failure the German losses had been very high indeed: over ten per cent of our planes had been destroyed or seriously damaged, including 5,000 fighters and 3,800 other planes. The strength of the Luftwaffe's flying personnel had been doubled certainly, but the newcomers were inadequately trained.

Approximately nine hundred pilots left the training schools every month, but they were no longer of the same high quality as their predecessors, and this meant that they were inferior to their R.A.F. enemies, who were now being joined in increasing numbers by Canadians, Australians, New Zealanders and volunteers from other parts of the Western World. In addition, high-quality aviation spirit was in short supply in Germany, and, quite generally, the fighting qualities of both men and machines were no longer so high. In other

words, Germany was beginning to experience a repetition of the troubles which caused her defeat in the First World War, and this explains a great deal of what was to follow.

In his by now traditional New Year Message Hitler talked of Germany's ruined cathedrals and of her slaughtered civilians, and – as he had always done previously and was always to do in the future – he promised terrible reprisals.

In Russia, the Soviet Air Force lacked both suitable material and personnel for taking part in any strategic war behind the enemy's lines, and so it was used almost exclusively for close co-operation with the Red Army in the field and for the direct support of the ground forces. Only very infrequently did long-range bombers flying at great height penetrate in ones and twos as far as Berlin.

In the United States, according to a message of the President to Congress, aircraft production reached 5,500 in December 1942, which was more than twice Germany's maximum production, and was still growing steadily. By the end of the year the United States had produced 47,836 planes, including 2,625 heavy, long-range bombers of the Flying Fortress and Liberator types.

In August the advance guard of the U.S. 8th Bomber Force arrived in England. At first these bombers were used against convenient objectives in occupied Western Europe, and, later on, in North Africa, where they soon made the air situation very difficult for Rommel.

According to figures provided by Lord Tedder, in 1942 British and U.S. planes dropped 53,755 tons of bombs on Germany, whilst in the same year the Luftwaffe dropped only 3,260 tons on Britain.

The Major Anglo-American Offensive

ALLIED statesmen and their Chiefs of Staff meeting in Casablanca in January 1943 expressly confirmed the decision of the British War Cabinet of 14th February, 1942, on 'area bombing'. In other words, it was decided that instead of confining bombing attacks to chosen military and industrial targets believed to be of importance for the prosecution of the war by Germany, the built-up residential areas of her towns were to be bombed – expressly without regard to the loss of civilian lives.

This fateful step went into the history of air warfare as 'the Casablanca Directive', and it represented a deliberate policy decision at the highest possible level. Nevertheless, despite what is often said, it was not this decision which pronounced sentence of death and destruction on the ancient towns of Central Europe. It was another decision taken a year previously which did that. The significance of the Casablanca Directive lies in the fact that it sought to make indiscriminate bombing respectable as a means of waging war, in the belief that it promised to exercise a decisive influence on the course of the war. The whole of Germany was now declared a target area.

The Chief of British Bomber Command, who was entrusted

ed with the larger share in the execution of this decision, tells us how he interpreted his instructions (*Bomber Offensive*, p. 144): '... the scope of my instructions had been enlarged as a result of the Casablanca Conference ... The subject of morale had been dropped, and I was now required to proceed with a joint Anglo-American bombing offensive for the general "disorganization" of German industry ... which gave me a wide range of choice and allowed me to attack pretty well any German industrial city of 100,000 inhabitants and above ... the new instructions therefore made no difference.'

During the conference itself there was a clash between the British and U.S. views on the most effective method of waging strategic bombing warfare when the British tried to persuade General Eaker, Commander-in-Chief of the U.S. 8th Air Force, to accept their method of indiscriminate bombing. The clash was so sharp that it almost led to a breach, but at the last moment Churchill made an unexpected volte-face, which he has himself described in his reminiscences.

Three general objectives were chosen for the main bombing offensive: (1) the towns of the Ruhr, as Germany's arsenal; (2) big towns in the interior of Germany; and (3) Berlin, as the capital and Germany's political centre. These objectives were to be dealt with in succession.

Until May 1943 this task was exclusively in the hands of the R.A.F., but then the U.S. 8th A.F. in Britain was strong enough to join in. At first its operations consisted mainly in daylight attacks against chosen objectives, mostly German key-industrial points. There was an expressly announced secondary aim: namely that of challenging the Luftwaffe

fighter force and destroying it – in the mistaken belief that the Flying Fortresses were so powerfully armed that they could shoot any attacking fighters out of the air. Personnel changes had also taken place. By the beginning of 1943 thirty-seven per cent of Bomber Command crews were men from the Dominions and Colonies – and there were now 250,000 men in training in the United States.

The Battle of the Ruhr

The offensive opened on 5th February, 1943, and continued until 29th June of the same year. It was a fierce and costly battle for both sides. 'Open towns', in the sense of towns which were not defended at all, no longer existed in West Germany, a point which Spaight stresses in various passages of his book *Bombing Vindicated*, pp. 80–83: 'They (the towns of the Ruhr) are literally fortresses. . . . The bomber crews who venture near them go into the jaws of death . . . Many come back with their wings and fuselages torn to shreds. Many never come back at all . . . The attack on such a centre is a colossal battering match between air and ground . . . Nowhere has the battle been fiercer than at Essen . . . The centres of war production . . . are large towns. They are sometimes, too, old towns in which there are buildings of historic association and cultural interest. Inevitably damage is sustained by such buildings in the course of attacks which are directed against military objectives, and which, in view of the powerful nature of the defence, can be delivered only in conditions which make absolute precision of aim impracticable.'

In April 1943 alone the R.A.F. lost 200 heavy bombers whilst attacking Germany's towns – and 1,500 pilots, observers, navigators, wireless operators and machine-gunners.

'Area bombing' was now brought to a new pitch of efficiency: a radar-guided approach took place in several successive waves, one rolling in as soon as the previous one had receded, flying at various heights and coming in from various directions. In this way there was an increasing concentration in time, space and material. For example, in May 1942 the first 'thousand-bomber raid' dropped 1,500 tons of bombs on Cologne in ninety minutes. The same result was now achieved by 400 bombers in fifteen minutes.

The war in the air intensified from week to week. Apart from the loss of life and the material devastation, the nerve strain of nightly alerts was beginning to take its toll. Germany's warning system gave only the full alert, and the disadvantage of this was that in an otherwise peaceful night the arrival of a few planes on nuisance missions would drag between fifteen and eighteen million people from their beds.

The situation in Britain at this time was very different indeed, and in June 1942 Churchill was able to suggest a relaxation of the black-out in view of the comparative infrequency and unimportance of German air-raids.

However, by the middle of June there was a noticeable falling off in the weight of the attack on the Ruhr. R.A.F. losses had risen above five per cent, and hardly a bomber could be used for more than twenty missions. It was clear that the defence had become dangerously concentrated – following the example of the attack – and in order to loosen

it up the offensive was now extended to Central Germany. Bombing warfare was enlarging the scope of its operations.

In the meantime the objective of the concentrated attack on the Ruhr had not been attained. Despite all the destruction in the industrial areas, and despite the great burden imposed on the civilian population, the figures for war production continued to rise steadily, whilst life went on more or less as usual in the extensive ruins.

At the end of May, Churchill was in the United States, where he delivered a speech to Congress clearly indicating that he was by no means clear in his mind as to the success of the air offensive so far. He admitted quite frankly: 'Opinion is divided as to whether the use of air power could by itself bring about collapse in Germany and Italy. The experiment is well worth trying, so long as other methods are not excluded.'

The Attack on the Ruhr Dams in May 1943

The attacks launched in the night of 16th–17th May, 1943, on the Möhne, Eder and Sorpe dams were part of the general Ruhr programme of Bomber Command. They represented its biggest and most impressive success – and they were carried out by precision bombing of a high order. The aim of these combined attacks was very ambitious; it was at the very least to disrupt the productive capacity of the Ruhr, and if possible destroy it altogether, thus exercising a decisive effect on the course of the war.

The attacks certainly did threaten Germany with a wide-



Lübeck Cathedral in flames after the first big fire raid in March, 1942. The nave has collapsed.



Heligoland was one of the first and last targets of the R.A.F.
Above, before the bombing; below, the aftermath.



spread stoppage of industrial production in the Ruhr, and the danger was only just averted; firstly because the attacks were not completely successful, and secondly because the repair work was carried out at an unexpected and astonishing speed. Today the relationship of interdependence between hydraulic power and power production on the one hand, and industry, transport and public hygiene on the other are closer than ever before, and there is great public interest both in Germany and abroad in the details of this unique offensive against the dams, and in the prospects of improved defence measures to prevent a repetition in any future war.

The Möhne and Sorpe dams are both in the Ruhr, about ten miles apart. The Möhne Dam holds about 140 million tons of water in a great lake which is fed by the River Ruhr; its purpose is to catch surplus rainwater, prevent flooding, provide power for generating electricity, keep a constant navigable flow in the Lower Ruhr and maintain the underground water level necessary to keep the Ruhr supplied with industrial and household water. The two dams work together and provide the Ruhr with about seventy per cent of its water for industrial purposes, and all the drinking water for its four and a half million inhabitants.

The Eder Dam is the biggest of the three. It also provides water for industrial purposes, prevents flooding, makes the River Weser navigable in drought periods by supplying it with water to replace that withdrawn from it by the Mittelland Canal, maintains the level of the Rivers Eder, Fulda and Upper Weser, and provides a number of important hydraulic power stations with a regular water supply.

TABLE NO. 1

Objectives of the Dam Attacks

<i>Dam</i>	<i>Built</i>	<i>Construction</i>	<i>Height</i>	<i>Thickness</i>		<i>Volume</i> (17th May, 1943) tons
				<i>Below</i>	<i>Above</i>	
			<i>ft.</i>	<i>ft.</i>	<i>ft.</i>	
Möhne	1911	Quarystone Wall	144	108	11	140
Sorpe	1913	Sloping earth walls with in- terior re-in- forcement	192	96	3.2	74
Eder	1914	Solid masonry	150	115	18.2	214

The experts of the British Air Ministry, who had been engaged in calculating the probable economic results of the destruction of these three dams since the previous January, were very optimistic – over-optimistic as it turned out – and they believed that if the attacks were launched successfully when the water level was at its highest, then by July, or at the latest August, industrial production in the Ruhr would come to a standstill, whilst the immediate results would rob the civilian population of water for drinking and household purposes. If the Möhne dam alone were destroyed they calculated that the same economic results would ensue somewhat later, in the spring of 1944. In particular they were hopeful that a successful outcome of the project would have a definite strategic effect on the prosecution of the war, hence the great importance attached to it.

The destruction of the Eder Dam was expected to bring all inland water transport on the Upper Weser to a stop for many months, and at the same time cause a big drop in in-

dustrial production in Cassell, together with heavy loss of life and widespread damage by flooding. However, although the Eder Dam was the largest of the three, no decisive effect on the prosecution of the war was brought about by the destruction of this dam alone.

No direct attack on the electric power supply was intended, and any such results were to be considered as a bonus, because the Air Ministry experts wrongly assumed that the grid system was already highly developed in Germany, and that any loss of power could quickly be made good from other sources.

Practical preparations for the project were begun in the middle of March, by which time a mine-bomb had been specially designed for the purpose. This mine-bomb was like a canister in shape, with a diameter of ten feet. The actual weight of high explosive in each canister was two and a half tons. Twenty-three Lancasters were specially adapted to carry them, slung athwart the bomb bay, each canister weighing four tons. There was a special device to impart a rotary motion in the opposite direction to flight. Released at an exactly calculated height and distance they were directed along specially devised rails at an angle to the surface of the water, with the result that they bounced along over the surface in great leaps, like flat stones in ducks and drakes. In this way they oversprang the defensive booms and reached the far wall of the dam, where they sank to the bottom and rolled in close to the dam wall, thanks to the contrary rotary motion imparted to them on their release. The main fuse was hydrostatic and was operated by water pressure at a depth of sixty feet.

In order to carry these heavy mines without affecting their

flying qualities the specially-adapted Lancasters were stripped of every item of equipment not absolutely necessary, carrying even only two cannon, one in the front and one at the rear. The most favourable combination of speed and height was calculated at 240 miles per hour at fifty-eight feet above the surface. Obviously this required absolutely first-class, highly-trained and experienced personnel; and Wing Commander Guy Gibson, a man who had already flown 173 successful missions, was entrusted with organizing the mysterious 'X' Squadron which was to carry out the mission. He was given a free hand and allowed to pick his crews from the *élite* squadrons of the R.A.F., amongst men who had already had a good deal of experience in precision bombing. The result was the famous 'Dam Busters Squadron', which will always hold a place of high honour in the history of the R.A.F.

Training was intense and lasted for six weeks, being carried out over ten chosen routes in three-hour flights at the speed and height specified. The landscape chosen for the purpose was as like the ultimate objective as possible, and in the final stage of the training mock-ups were erected on Uppingham and Colchester reservoirs. Now clear moonlit nights cannot be relied upon in England so at first the crews flew in daylight, wearing dark glasses, and later on with their plane windows covered with blue wash.

With such low flying there was always the danger of hitting the surface of the water, and in fact, five machines were lost in this way during training. The flying route was gradually adapted to the real thing, and a mock-up of the dams complete with network defence booms was built on one of the lakes. The squadron did no less than 2,500 hours of training

against this objective, each bomber making 125 attempts with dummies. Finally real bombs were used.

Characteristic of the thoroughness and brilliance of these preparations and the determination of the aircrews, was that the men themselves invented a reliable altimetric device – something with which the backroom scientists had so far been unable to provide them.

After a sort of dress rehearsal had shown that both men and machines were fully prepared for the job, the actual attack was fixed for the night of 16th–17th May, which was the night of the full moon and, as it happened, the period during which the water surface of the dams was at its highest. If for some reason or other it had been impossible to carry out the attack in the week from 13th May to 19th May then the whole undertaking would have had to be postponed for a whole year before similarly favourable conditions would have been obtainable.

For the first time the crews were now briefed in detail as to their objectives and were able to study all the details on specially constructed scale models which were kept absolutely up to date by regular reconnaissance flights. In this way they were able to familiarize themselves with the detailed appearance and position of their objectives.

'Operation Chastise'

Guy Gibson had eighteen planes at his disposal and he divided them into three squadrons. Squadron No. 1 consisted of nine special Lancaster bombers under his own immediate

command. The squadron took off at 2128 hours to destroy first the Möhne and then the Eder dam. Squadron No. 2 consisted of five bombers and its mission was to destroy the Sorpe dam, at the same time creating the impression if possible that this was the main attack, in the hope of drawing the night-fighters away from the Möhne dam. Squadron No. 3 consisted of four bombers and was held in reserve in England to be used according to the nature of the reports received from the other two squadrons.

Whilst crossing the North Sea the bombers flew as low as possible in order to get under the German coastal radar chain. In fact, they flew so low that they were actually endangered by the waves.

Guy Gibson led the main squadron in close formation as far as Duisburg, where, owing to the intensity of the flak, formation had to be broken. However, the planes subsequently reformed. One of the bombers was shot down over a newly-established and as yet unknown German airfield, and its mine exploded. The rest of the squadron flew on over Dortmund, Hamm and Soest, greatly harassed all the time by ack-ack fire and searchlights.

Squadron No. 2 was less fortunate. Two bombers plunged into the sea, and two others were so badly damaged by the waves that they had to put back to base. Only one plane reached its objective.

When Guy Gibson arrived with his eight bombers over the Möhne dam, which was clearly visible in the moonlight, about a dozen light anti-aircraft guns opened up on the squadron from the dam itself and from the banks. He sent the rest of the bombers into a waiting position, circling until he

needed them and keeping in touch by radio-telephony, then he flew the first attack himself. During the approach and afterwards his own cannon fired on the anti-aircraft guns on the dam. The first mine was released at 0028 hours. The bomber increased height and safely surmounted the dam wall. A tremendous explosion took place behind it and vast quantities of water were hurled into the air.

But the dam held.

When the surface of the water had returned to normal he sent in the second bomber, accompanying it on the approach and giving it cover by firing on the anti-aircraft batteries. This time the mine was released a little too late, and it fell behind the dam wall. In the tremendous explosion that followed the second bomber was blown to pieces.

Thirteen minutes later the third bomber attacked. Once again Guy Gibson's machine accompanied it, giving it covering fire, and again suffering damage. This third mine was well aimed and once again vast quantities of water were hurled into the air, but the dam wall still held. The fourth attempt produced no tangible result. Then the fifth bomber succeeded.

The sixth Lancaster was already flying into position to make its run in when it was seen that the wall was clearly breached for some considerable distance. The wall had burst at last. All the anti-aircraft batteries except one were no longer firing and now this one was silenced, too. The released water was surging over the banks, the power station in the middle of the dam had collapsed, and the whole valley was filled with spray.

Guy Gibson reported the success of the mission by the

agreed codeword and flew on with the three bombers which were still available for the second attack. They flew over Sauerland to the Eder dam, but when they got there they found that an early morning mist had developed, which made it very difficult for them to get their bearings. However, after a while they succeeded. The lake was in a deep valley hemmed in by mountains. To make the situation even more difficult, the Eder turned sharply just before reaching the dam wall. But at least there was no flak to trouble them here; all the anti-aircraft batteries had been transferred to the Ruhr.

The first Lancaster was able to make its bomb run without interference of any kind, and it placed its mine exactly where it was required, with the result that a breach was torn in the dam wall at once. The next mine was released a little too late and it exploded on the crown of the dam, doing very little damage, but destroying the bomber itself.

At 0152 hours the third and last mine was successfully dropped – it was already growing light – and a broad gap was blown out of the dam wall. The wall now burst and the released water rushed down into the valley sweeping everything before it.

After the code message announcing the success of this second operation had been received from Guy Gibson, the reserve squadron was now sent out, two and a half hours later. Of these five bombers two were shot down on the way.

In the meantime the one remaining Lancaster of Squadron No. 2 had attacked the Sorpe dam, which was also undefended, but without success. At 0314 hours one of the Lancasters of the reserve squadron arrived. It placed its mine successfully, but the more elastic earth wall held. The other

two bombers of this squadron made their bomb runs against the Schwelme dam which also had an earth wall. One of the mines was successfully placed, but the wall held.

The losses of the attackers were very heavy. On the return flight another plane crashed into the sea, so that in all eight Lancasters were lost. Only one man of the crews of the bombers which were shot down escaped with his life, to spend the rest of the war in a prison camp. Guy Gibson was awarded the Victoria Cross for his extremely gallant conduct during the operations – the fourteenth member of the R.A.F. to earn the distinction during the Second World War. He was withdrawn from front-line operations but before long he volunteered again and in the following September he was shot down over Rheydt and lost his life.

Success or Failure?

More and more information gradually obtained from photographic reconnaissance made it clear that the highest hopes placed in the venture had not, in fact, been fulfilled. For one thing, the confident predictions of the economic experts proved over-optimistic; and they were not even right when they subsequently estimated the loss of production as a result of the raid at thirty-five per cent, though even this was very far below what they had originally hoped. From this point on such predictions were regarded with increasing mistrust.

British accounts sometimes seek to awaken the impression that the attack on the Sorpe dam was never intended to be seriously pressed home, but this is not true, because it was

known that the full effect hoped for could only be obtained if both dams, which were coupled, could be breached.

In fact, it was the water from the Sorpe dam which carried Ruhr industry over the critical period until the other dams could be repaired. The British could not, of course, foresee that this repair work would be carried out in what would previously have been considered an impossibly short space of time.

However, an entry in the log of the Reich's Propaganda Ministry on 8th May indicates the consternation which these unexpected attacks caused:

'Last night we suffered heavy damage in the air war. An attack on the West-German dams was pressed home with great success. The Führer is extremely angry and impatient at the inadequacy of our defensive measures.'

But even worse than the direct damage caused, whose worst catastrophic effects were prevented without much credit to the régime, was the moral impression of the attack on the German people. Their confidence in the ability of the air defence to protect them received a new heavy blow. The authorities responsible had obviously assumed that the difficulties of such low-flying attacks were too great. They had provided no balloon barrages, no air nets, no smoke screens, no adequate anti-aircraft defences, no camouflage and no dummy installations to mislead the enemy; in fact they had neglected every possible precaution that might have been taken. There was not even a flood warning system which could have given the inhabitants and the factories instant warning of the danger which was threatening them. The official efforts to hush up and gloss over the affair only

resulted in the spread of rumours which mentioned more and more terrible figures of material losses and human casualties.

The Actual Result of the Attack

At the time of the attack the ordinary air-raid warning system was of course in operation, but people had become a little callous from constant repetition, sometimes several times in one night. The result was that many people were caught asleep in their basements and drowned miserably. No official figures have ever been published about the loss of life, but reasonable estimates put it at 1,200 civilians, including a camp of Ukrainian land girls. For the Eder Valley the total fatal casualties are sometimes put as low as fifty-eight and at others as high as 300, including those actually in Cassell.

The material damage done to power stations, waterworks, reservoirs, railway and road bridges, factory buildings, dwelling-houses, streets and roads and to agriculture in the valleys was enormous.

Recognizing that with the enemy now thoroughly alerted, no further attacks of this sort could possibly be successful, none was made. But what was surprising was that Bomber Command made no attempt to interfere with the repair work on the dams.

In all countries which rely on great dams (there are fifty-five today in Rhineland and Westphalia alone, and even seventy-five in Switzerland), the question of protecting

them against air attack has become one of the most worrying problems of modern air defence. In the course of humanitarian efforts to restrict air attacks to clearly defined military objectives by international agreement, an attempt is also being made to secure, under certain circumstances, the inclusion of such lake and river dams, and also of protective dykes, because civilian loss of life would be very great if any of them were breached. The danger would be very much greater and the consequences literally unforeseeable if vast masses of water released in this way had at the same time been made radio-active. However, because such dams are undoubtedly of first-rate importance for industry, and therefore for armaments, it is very difficult to draft a set of principles that belligerent governments would accept.

But even if such plans fail, there is still no need for despair, or capitulation before the threat of modern weapons of attack. Since the end of the war many new means of defence have been developed; and in the considered judgement of the experts, modern science affords sufficient means to defend big dams against attack from the air.

In a letter to *The Times* Lord Winters indignantly rejected the suggestion that the attack was suggested by German refugees during the war, and he pointed out that 'long before the war' there was a committee entrusted with drawing up a list of the most likely targets for air attack.

But there was a last touch of gall to come – after the war was over. In 1955 the Americans 'edited' their copy of the film *The Dam Busters*, which had been made as an epic of the R.A.F., and caused a good deal of understandable annoyance, and even questions in the House of

Commons, by cutting a Flying Fortress into the Lancaster squadrons.

Hamburg – an R.A.F. Show-piece

There were three chief highlights in the Allied air offensive against Germany's towns in 1943. In the first six months of the year there was the offensive against the Ruhr, and this was certainly more successful than previous attacks had been, though it was still very far indeed from obtaining decisive results. In midsummer there was a series of attacks against the town and port of Hamburg, which seemed at first to have been completely successful. And beginning in November came the 'Battle of Berlin', which was a definite failure.

The attack on Hamburg was the peak point of a British air offensive that had been prepared technically and organizationally for years. With regard to time, space and concentration it was the biggest of its kind, and ever since it has been regarded as the 'show-piece' of Bomber Command in the Second World War. It is the outstanding example in the history of air warfare of a large-scale attempt to attain a double objective. Hamburg was to be put out of action in two ways:

1. By the destruction of its productive, administrative and business centre;
2. By breaking the morale of its inhabitants under the sheer weight of terror and driving them out of the city.

'It was decided that Harris was to destroy it (Hamburg) with all the thoroughness of which his Command was

capable. When initiating the operation – to which the ominous code name “Gomorrah” had been given – he told his crew: “The Battle of Hamburg cannot be won in a single night. It is estimated that at least 10,000 tons of bombs will have to be dropped to complete the process of elimination. To achieve the maximum effect of air bombardment this city should be subjected to sustained attack. On the first attack a large number of incendiaries are to be carried in order to saturate the Fire Services.”

TABLE NO. 2

The Attacks on Hamburg

	<i>Dates</i>	<i>Bombers</i>	<i>Minutes</i>
R.A.F. Night attacks	24th–25th July	740	148
	27th–28th „	738	180
	29th–30th „	726	137
	2nd–3rd Aug.	350	151
U.S.A.F. Day attacks	25th July		162
	26th „	297	132
	27th „		42

Two thousand three hundred and fifty-three R.A.F. heavy bombers took part in the three main attacks and dropped 7,196 of high-explosive and incendiary bombs, chiefly the latter (4,300 tons). The total weight of bombs dropped equalled the weight of the Eiffel Tower!

Within the space of nine days, four night and three day-light attacks were launched during which a total of about 9,000 tons of bombs was dropped: 4,400 tons of high-explosives, including mines; 2,700 tons of stick bombs

weighing about 3½ lb. each, or over a million and a half bombs; and 1,900 tons of liquid incendiary bombs of varying sizes.

Over 100,000 men, aircrews, technicians and so on, were mobilized for the operation, and the necessary ground organization broke all records. It was a concentration of strength which could not be repeated at will. Thanks to improved jamming techniques and to the unexpected use for the first time of aluminium strips (known by the code name of ‘window’) dropped in large quantities to disrupt the enemy’s radar warning system and thus blind the defence, British losses were unusually low, and in all only fifty-seven planes were lost, or 2.4 per cent of the total attacking force. And but for the fact that unexpected icing-up took place during the last night of the attack the losses would have been even lower.

Harris himself was very satisfied with the results of his undertaking and in his book *Bomber Offensive* (pp. 175–6) he writes: ‘It was some time before the smoke of the burning city cleared away and air photographs of the damage could be taken. When this was done there was at last revealed a scene of unimaginable devastation – 6,200 acres in the most densely built-up district had been destroyed, seventy-five per cent of the most closely-built-up parts of the city . . . it was clear that all work and transport in the city had been stopped. The use of window had an immediate effect. On the first night of the attack . . . the radar-controlled searchlights waved aimlessly in all directions, the gunfire was inaccurate . . . no raid ever known before had been so terrible.’

This particular operation had the great advantage of both

good weather and good visibility, both particularly favourable conditions for an attacking force. In addition, the results of the attack were intensified because there had been an unusually long period of high temperatures and drought. In the previous three weeks only 44 mm. of rain had fallen, with the largest fall on 22nd July, namely 13 mm., which was negligible rainfall. And between 1st and 29th July humidity was only seventy-eight per cent, and the minimum was reached on 27th July with only thirty per cent. In the first half of July afternoon temperatures were never less than ninety degrees Fahrenheit in the shade. Between 15th and 25th July it was seventy-seven degrees in the shade; on 27th July ninety degrees; on 28th July ninety degrees; and on 29th July eighty-six degrees. And throughout the period in question the night temperatures remained unusually high, occasionally up to eighty-six degrees Fahrenheit.

Material damage and casualties were both much greater than anything experienced up to then in West-German towns – though both damage and casualties had been considerable. The destruction caused by area conflagrations was between sixty and ninety-eight per cent.

TABLE NO. 3
Area Conflagrations in Hamburg

	<i>July 24th—30th, 1943</i>		
	<i>Area</i> (sq. ms.)	<i>Circumference</i> (sq. ms.)	<i>Street Frontage</i> (ms.)
First attack	1.5	9.92	54
Second attack	5	6.7	135
Third attack	2.2	6.23	105

The following brief summary gives a graphic idea of the catastrophe: half Hamburg's dwelling houses were completely destroyed (eighty per cent by fire), and the remainder were more or less seriously damaged. Four big shipbuilding yards and the dock installations as a whole were very heavily hit. All the public services, including public transport, were paralysed, and within the first forty-eight hours 900,000 people had become homeless fugitives; 277,330 dwelling houses were totally destroyed, or 49.2 per cent of the whole; 23,005 dwelling houses were badly damaged, or 4.1 per cent; 38,970 dwelling houses were damaged, or 6.9 per cent; and 109,471 were slightly damaged, or 19.3 per cent; whilst 114,757 were left undamaged, or 20.5 per cent.

Some understanding of what these figures really mean can be obtained by comparing them with the damage done in other countries by air warfare. According to figures published by the British Ministry of Health in 1949 200,000 dwelling houses, or 1.6 per cent of the total, were destroyed in the sixteen British towns (including London) which were attacked by the Luftwaffe during the war.

In addition to the devastation in the residential quarters of Hamburg, 580 industrial buildings, 2,632 business premises, 379 office blocks, 76 public-service depots, 80 army buildings, 24 hospitals, 277 schools, 58 churches, 77 various cultural centres, 83 banks and insurance offices, 69 post offices and railway centres and 12 bridges were hit. In addition, 180,000 tons of shipping were sunk in the harbour, including many barges, though most of this tonnage was subsequently salvaged. The total quantity of debris was estimated at 40,000,000 tons. Although here as elsewhere, the built-up

centre of the town was heavily attacked, the inner town of Hamburg did not present the same picture of utter devastation to the point of unrecognizability. The position of the main streets and squares was still visible, and the topographical picture of the actual town centre and the Binnenalster was less distorted than that of the surrounding residential areas.

The transport system was completely paralysed, and it took a long time to get it going again, and the recovery, route by route, was only gradual. For example, over ninety miles of tramway conductor lines were destroyed. Though perhaps the underground suffered most of all.

At first the casualties were overestimated by both sides, and it took something like ten years before the experts were able to arrive at fairly reliable calculations, but now at least Hamburg is one of the towns about which we know most of in this respect.

TABLE NO. 4
Air-Raid Victims in Hamburg

	<i>Male</i>	<i>Female</i>	<i>Total</i>
1940	70	36	106
1941	289	315	604
1942	307	254	561
1943	12,064	18,418	30,482
1944	1,740	1,811	3,551
1945	1,233	1,017	2,250
	<hr/>	<hr/>	<hr/>
	15,703	21,851	37,554
Percentages	42	58	100

Thirty thousand four hundred and eighty two out of the total of 37,554, or more than eighty per cent, lost their lives

in the great raids at the end of July and the beginning of August 1943, when an average of 22.1 people out of every thousand inhabitants was killed – 25,965, or almost seventy per cent of all the verified dead, lived in Grossbezirk Mitte, which includes the town centre, where 59.6 out of every thousand inhabitants were killed. In this district the number of female casualties was forty-five per cent higher than the number of male casualties. But even this high average was exceeded in the purely residential quarters of Grossbezirk Mitte which do not specifically belong to the town centre. In these districts no less than 18,500 people were killed, or about half of the total number of verified deaths.

For example, in the Hammerbrook district 361.5 people were killed out of every thousand inhabitants, which means that a third of the population perished in the flames. In other residential areas 267.2 and 160 people were killed per thousand inhabitants.

The number of people in Hamburg who died as the result of air attack was higher, for example, than in the whole of Bavaria; and even this high figure of 37,554 dead does not represent the total fatal casualties, because according to careful investigations conducted over a number of years a further 17,372 persons are, at a minimum estimate, unaccounted for, and must now be added to it.

The total number of fatal casualties in Hamburg as a result of air attack was in the neighbourhood of 55,000 which represents twelve per cent of all the fatal casualties throughout the pre-war territory of the German Reich (approximately 450,000). At the same time it is almost as great as the total number of fatal casualties suffered by the

British Army between Dunkirk and Arnhem – according to Mr. Churchill 60,500.

Fifty five thousand, the number of civilian dead in Hamburg, is only thirteen per cent lower than the total casualties suffered by soldiers from Hamburg on all fronts during the whole of the Second World War, namely, 63,000.

The number of women killed was about forty per cent higher than the number of men. The toll of dead children was also terrifyingly high – 7,000 children, or nineteen per cent of the total, were killed, and 10,000 children were orphaned either fully, or by the loss of one parent.

After the preliminary enthusiasm when it was realized that the success had been obtained, at very low cost, whereby the incendiary proved itself five times as effective per ton as the high-explosive bomb, a detailed analysis of the undertaking as a whole produced somewhat disappointing results: the area bombing of town centres under cover of darkness, which had been regarded as infallible, did not cripple war production even at the destructive zenith of the attack. To add to the disappointment the confident prediction that terror bombing would speedily result in the collapse of civilian morale was also seen to be false.

Soon after this experience Bomber Harris declared resignedly: 'It never occurred to me that we could reduce the largest and most efficient industrial power in Europe to impotence by a year's bombing with an average striking force of six or seven hundred bombers which were never certain to find their target if it lay east or south of the Ruhr.'

Later investigations conducted by the victorious powers, who would certainly not have been averse from arriving at a

more favourable conclusion, showed that the total loss of production in Germany as the result of sixty heavy attacks was seventeen per cent. The U.S. Strategic Bombing Survey writes: 'These figures demonstrate that Germany's cities had a surprising resilience, and an extraordinary ability to recover from the effects of ruinous attacks. The raids on Hamburg in July–August 1943 were amongst the most devastating of the war. Yet, despite the deaths of over 60,000 people, the total destruction of one-third of all houses in the city, and the disruption of normal processes of living, Hamburg as an economic unit was not destroyed. It never fully recovered from the bombings, but in five months it had regained eighty per cent of its former productivity, despite the fact that great areas of the city lay, and still lie, in dust and rubble. As in the case of industrial plants, when it was found much easier to destroy the buildings than the machines in them, so also it is much easier to destroy the physical structure of a city than to wipe out its economic life.'

Thus this giant operation, though carried out as effectively as possible under the most favourable conditions, and actually meeting with considerably more success in almost every respect than most of the other large-scale bombing operations, did not achieve its aim.

The Torch of Death

All the same, as far as Germany's civil-defence was concerned, Hamburg was a flaming torch of deliberate mass destruction, and the future looked grim. For one thing, the

inferiority of the Luftwaffe could no longer be concealed by any form of trickery or propaganda, and after this unexampled catastrophe the inhabitants of all those towns which had so far been spared gloomily expected to suffer the same fate sooner or later. In addition, general evacuation orders represented an official admission that the authorities were no longer in a position to protect the inhabitants even of towns in the heart of Germany. For a long time Goering's prestige as chief of the Luftwaffe had not stood very high; Hamburg toppled it for good and all.

However, long overdue measures were now taken to strengthen active and passive defence against the air terror, including a considerable stepping up of fighter-plane production, but – despite astonishingly high production figures – none of these measures had much effect. The enemy's advantage in armaments was already too great.

But despite everything, deprived of all effective protection, and knowing that it was being left more or less to its own devices, the civilian population still held out. This amazing fact becomes understandable only with a knowledge and understanding of Germany's highly-organized and efficient civil-defence organization.

Before it suffered its week of catastrophe Hamburg had already survived 137 air attacks which had lasted a total of 203 hours. From small-scale nuisance raids to raids which went on for hours the town had experienced modern air attack in all its forms; and thanks to the energy and efficiency of the official civil-defence organization, supported by the whole population there had never been panic or catastrophe. And so in the summer of 1943, relying on its careful prepara-

tions and its very considerable experience, Hamburg was as ready as any big town could be to survive further air attack. Provided that nothing altogether out of the ordinary happened it was felt that the town could face the further development of air warfare with courage and reasonable confidence. For example, during the last big incendiary attack the combined civil-defence services had extinguished 1,500 fires, whilst at least an equal number of small fires had been extinguished with the relatively primitive means at the disposal of street fire-guard parties. Every house had its fire-guard party, and specially important objectives were guarded by large numbers of men; for example, every night 15,300 men were on duty to protect the very extensive dock and harbour installations. The Hamburg Fire Brigade had 305 modern motor fire-tenders on land and 50 fire ships in the harbour, and its total strength was 3,600 men. In addition there were 935 auxiliary pumps in the hands of factory, post office, railway and similar fire-parties.

The situation with regard to air-raid shelters was not so good, though 61,000 cellars and basements had been turned into shelters which offered protection against blast and flying fragments, whilst during the course of the war 10,000 of these were specially reinforced and strengthened. But for another 63,000 basements and cellars there was neither labour nor materials to do anything really effective. All the same, whatever could be done locally in the circumstances was done. Big bunkers, regarded as bomb-proof, were still in course of construction.

What actually happened during the very heavy and concentrated incendiary raids exceeded all previous experience.

Whilst fire-fighters and civil-defence forces were engaged in fighting the first fires and digging victims out of the ruins – with every chance of ultimate success, a second heavy blow fell right in the middle of the heavily built-up residential quarters in the eastern part of the town. Great conflagrations developed into raging fire storms and completely gutted whole quarters of the town, destroying everything and everybody in them.

The third and fourth raids completed the work of destruction by attacking those districts which had been spared in the earlier raids. At the same time one or two small neighbouring towns (such as Elmshorn and Wedel) which were packed with fugitives from Hamburg, were also bombed. These operations carried out by the R.A.F. under cover of darkness, were clearly of a terrorist nature; and during the day the U.S.A.F. bombers attacked military and industrial targets in the dock areas, and, in particular, the shipyards and submarine yards. The bombs used for this purpose were mostly of the high-explosive type.

The determined efforts made in the beginning by the fire brigade and the combined civil-defence forces with the support of the inhabitants to fight the fires in the town itself were soon overwhelmed by repeated hails of incendiaries which fell through the roofs everywhere and started new fires. Their efforts were finally thwarted by an acute shortage of water. Some indications of the weight of the attack can be obtained from the fact that sixty-five stick-bomb incendiaries, four phosphor canisters and one high-explosive bomb are known to have fallen in an area roughly eighty yards by fifty; whilst 155 stick-bomb incendiaries fell on one medium-

sized factory alone. These figures indicate not only the degree of saturation, but also the proportional relationship between the weight of incendiary and high-explosive bombs.

Crippled by no less than 847 direct hits by high-explosive bombs the town water mains ran dry and there was soon no water to supplement the supplies kept regularly available on the spot, with the result that street fire-parties were unable to function and the fire brigade was inundated with more calls than it could possibly cope with. The authorities rushed in help from outside, but what could be done when 16,000 houses were on fire at the same time, when the heat in the burning blocks rose to shrivelling heights (1,500° Fahrenheit) and when instead of individual houses whole streets were in flames? White-hot heat set more and more houses aflame, and so rapidly that hundreds of fleeing men, women and children were scorched to death in the streets and squares.

In many areas the heat from the burned-out ruins was so intense even after the fire storm itself had subsided that it was days before the streets could be entered at all. In the conflagration areas it was thirty hours after the attack before it became possible to see a little in the artificial twilight; up to then dense clouds of black smoke mixed with dust had blotted out the otherwise cloudless sky.

As soon as it was at all possible the local civil-defence authorities did their best to piece together a reliable picture of the volume and nature of the weapons used in the three main attacks, and the following figures were worked out per square kilometre:

TABLE NO. 5

Bombs dropped per sq. Kilometre

	<i>Mines</i>	<i>High Explosives</i>	<i>Stick Incendiaries</i>	<i>Liquid</i>
First attack	7	145	17,580	498
Second attack	39	803	96,429	2,733
Third attack	12	253	30,240	860

From these figures it can be seen that the second attack was very much heavier than the other two put together.

Hamburg happens to be one of the few big towns for which accurate figures are available concerning the strength of the general civil-defence forces. They are enough to make any Minister responsible for civil-defence in the future turn pale with anxiety.

Fire Brigade personnel (local and outside drafts)	14,360
Rescue services of various kinds	8,000
Military drafts	12,000
Police	1,800
Total	36,160

It is difficult to set down the achievement of the various services in figures, but in addition to fighting fires the men of the fire brigade rescued about 18,000 people. The rescue services freed 6,200 people trapped in air-raid shelters, and 232 people were subsequently dug out of the ruins alive.

The First-Aid Services attended to 1,772 injured people on the spot, and ambulance services took 6,700 more seriously injured people to emergency casualty clearing centres.

About 5,000 people were assisted out of the fire areas; 3,976 serious casualties were treated in the established local first-aid centres, and 20,400 less serious casualties. There were seventy-two first-aid centres, of which twenty-one were totally destroyed, and those which were in operation were unable to deal with the very high number of casualties brought in to them. In addition the civil-defence services carried out a great number of other tasks such as burying the dead, helping fugitives, registering casualties, providing water, removing furniture and other household goods from threatened premises, and so on. The dock and harbour salvage organization was able to provide effective assistance in 153 cases both on the water and on land.

The subsequent salvage and clearing-up operations lasted for a long time. At the end of two months the bodies of 30,000 victims had been recovered, 170 miles of choked streets had been cleared, 4,559 ruined houses demolished, and 3,109 dangerous house façades levelled.

That is a very rough sketch of the damage done in the devastating attacks on Hamburg. British Bomber Command's Operation 'Gomorra' convinced the last doubter: the air war had become an air-fire war.

The Air-fire War

FIRE HAS always been regarded as the first and oldest method of destruction. The history of warfare shows that far more towns have been destroyed by fire than in any other way. Thus, far from being surprising, it was really a matter of course that the belligerents in the Second World War should remember this fact and turn their attention to the use of this ancient and proved weapon of destruction. A new aspect of its possibilities was its use in combination with the aeroplane, and for the first time it became feasible to carry out that old nightmare of mankind: fire from heaven, as the accursed towns of the Old Testament were destroyed.

Even during the First World War incendiary bombs of various kinds were developed, though their effectiveness was still very limited. Germany was farthest ahead in the development of the incendiary bomb and the well-known physicist, Nernst, constructed the first practical incendiary, though it was far from perfect and not particularly effective. However, in all countries scientists and technicians worked steadily with a great deal of imagination, inventiveness and determination to develop an effective incendiary bomb. The result was the thermite bomb weighing about two pounds, which, despite its small size, produced a thermal effect similar to an

electric arc and was altogether a very useful weapon. Towards the end of the First World War, Germany had large quantities of these bombs ready for use. They were not, in fact, used against Britain as intended because 'even the large-scale destruction to be expected from their use was not likely to affect the course of the war as a whole, and destruction for destruction's sake could not be contemplated' (General Ludendorff).

However, the possibility of their use – and if it were decided to use them, then their use on a big scale – in the Second World War had to be taken into consideration. And they were, in fact, used, and used in this way. It was fire that gutted our towns and razed them to the ground; it was fire that destroyed property on a vast scale and made millions of people homeless. Three-quarters of the total devastation brought about by the war was caused by fire. Never before in the history of war did military incendiarism have such devastating effects.

At least those responsible cannot be reproached for not recognizing the danger that threatened our urban civilization – a really deadly danger – or for not taking it seriously enough. Certain experts even described in advance the fate of our towns in a modern air-fire war in what seemed like visionary but turned out to be entirely accurate terms. Even the return of the 'fire storm', a phenomenon which had been unknown in our towns for a century and had been largely forgotten, was predicted and described very accurately quite early on – for example in a warning article published in 1927 in a German newspaper with a mass circulation, the *Berliner Illustrierte Zeitung*.

'The individual fire sources rapidly link up. Scorching hot air shoots upward, and cooler air rushing in along the ground takes its place to produce the firestorm that turns small fires into vast conflagrations.'

This was the first use of the graphic expression 'fire-storm', which was subsequently internationally adopted. Previously there had been no name for this old and yet new aspect of warlike operations. How graphically far-seeing it was can be seen from an on the spot description of the fire-storm when it actually occurred:

'As the many fires broke through the roofs of the burning buildings, a column of heated air rose more than two and a half miles high and one and a half miles in diameter. . . . This column was turbulent, and it was fed from its base by in-rushing cooler ground-surface air. One and one and a half miles from the fires this draught increased the wind velocity from eleven to thirty-three miles per hour. At the edge of the area the velocities must have been appreciably greater, as trees three feet in diameter were uprooted. In a short time the temperature reached ignition point for all combustibles, and the entire area was ablaze. In such fires complete burn-out occurred; that is, no trace of combustible material remained, and only after two days were the areas cool enough to approach.'

Rarely was a prophecy so accurately fulfilled. But at the time the idea of the fire-storm did not greatly move the general public, who probably didn't believe in it. However, it did give rise to long discussions amongst the experts about the new danger and the best means of coping with it. In consequence very early on the incendiary bomb was – theoretically

at least – given its rightful place in the arsenal of air-war weapons; namely, above that of the high-explosive and gas bomb where the target to be destroyed is a built-up area.

In view of this it is astonishing to discover that in the first phase of the war both the main belligerents, Britain and Germany, clearly favoured the high-explosive bomb. But there is an explanation: from the discovery of gunpowder right down to the development of the atom bomb, arms technique has been primarily connected with the explosive, and centuries of habit tended to make those responsible underestimate any other kind of weapon. Invariably, too, each new war begins with the equipment and the tactics with which the last one ended. For example, from the days of the First World War very little was known in practical experience of anything but high-explosive and its effects; incendiaries and aero-chemical weapons represented new country altogether.

When, after the hopeful restraint which was exercised in the beginning, air warfare took its fateful course, each side prematurely informed the other during the course of unimportant raids just what new-type incendiaries were available, though their construction had previously been kept a dark secret. In this way both sides surrendered the factor of surprise that is otherwise so highly valued in war.

It was in this way, very early on (during the first British raids on the coastal towns of North-West Germany) that we made the acquaintance of Britain's 3½ lb. stick thermite base incendiary.

However, up to the beginning of the German western

offensive incendiary bombs were not used in any very great numbers, whether out of wise restraint or because the bomber arm was not yet ready is an open question. But one way or the other, it may be assumed that technical unpreparedness was not the only reason. It is likely that fear of the unforeseeable consequence of air-fire war, once unleashed, played a role too; and even when it was once decided to let air warfare take its devastating course, the high-explosive bomb was favoured for quite a long time as the apparently more effective weapon.

At the time of the Battle of Britain the leaders of the Luftwaffe were not prepared to listen to anything which called the dominating role of the high-explosive into question and favoured the incendiary as a weapon with the greater return. An understanding of the real possibilities of the modern incendiary and its operational use came at a time when it was too late for the Luftwaffe to take advantage of it.

Field Marshal Kesserling, who was in command of Air Fleet 2, which was chiefly responsible for the operations against Britain, writes in his memoirs: 'We overestimated the effect of the high-explosive bomb, as the Allies did later.' And turning to the incendiary, he writes: 'The incendiary bomb was a more efficient weapon; dropped in thousands, even hundreds of thousands, over a given area it could cause fires which would destroy completely, where a high explosive bomb would only damage.'

The Luftwaffe carried incendiaries purely as a supplementary load, the main weapon was always the high-explosive bomb – and this was true even of the three big so-called fire raids on London: the attack on the docks and markets on

7th September, 1940; the attack on the City, which was particularly susceptible to fire – an attack of a clearly terroristic character; and the heaviest attack of them all on 20th May, 1941, against various military and industrial objectives such as railway stations and supply centres.

In the first phase of the air war – on 14th May, 1940 – the Luftwaffe dropped ninety-eight tons of high-explosive on Rotterdam and no incendiaries at all; 386 tons of high-explosive and seventy tons of incendiaries on London in the night of 15th–16th October, 1940, a proportion of 11:2; 500 tons of high-explosives and thirty tons of incendiaries on Coventry in the night of 14th–15th November, 1940, a proportion of 33:2; and 400 tons of high-explosives and ninety-eight tons of incendiaries on London in the night of 10th–11th May, 1942, a proportion of 4:1.

Between 6th and 19th September, 1940, during the daylight attacks on London, 5,187 tons of high-explosives and 690 tons of incendiaries were dropped, a proportion of 33:4. In the period from 8th to 31st August, the time of the constant air offensive against southern England, 43,000 tons of high-explosives and 1,600 tons of incendiaries were dropped. From January to May 1942, when the systematic bombing of Britain came to an end, about one-third of these quantities was dropped.

These figures show clearly why Britain never had to cope with extended area conflagrations, but only, in the worst case, with one or two localized conflagrations.

British Bomber Command also recognized the superiority of the incendiary only rather late in the day, and then unwillingly and under pressure. After the first series of air

attacks on Germany's coastal towns in the spring of 1942 a controversy on the relative effectiveness of the high-explosive and the incendiary opened up. The Air Staff of the R.A.F. favoured the incendiary as the more effective weapon for attacks on urban centres, and the results of the experimental attacks on Lübeck and Rostock confirmed this view to the full.

However, Bomber Harris and his associates were of a different opinion. They were in favour of high-explosives and they argued, not without reason, that high-explosive was more intimidating and had a greater effect on morale. They also believed, perhaps erroneously, that it killed more people, and as Harris wrote to the Air Ministry a few weeks after his appointment to lead Bomber Command: 'We shall have to kill a lot of Boches before we win this war.'

Even air reconnaissance photographs of the widespread damage done by fire in Lübeck did not convince him, and his answer was that those old towns were 'matchboxes', and he stuck to his argument that high-explosive, whether dropped singly or in masses, had a greater moral effect – something which could not easily be refuted.

Finally the clear difference in the extent of the damage caused in Lübeck and Cologne as shown in air-reconnaissance photographs tipped the scales. Up to the great thousand-bomber raid, Cologne had been attacked on 107 separate occasions, chiefly with high-explosives. A compromise was now arrived at: two-thirds incendiaries and one-third high-explosives, though of course this proportion was rarely strictly adhered to in practise. In general a higher proportion of incendiaries was used against town centres

regarded as particularly susceptible to fire, and a higher proportion of high-explosives against the newer and more solidly built towns of the Ruhr and against Berlin. A careful analysis of the results of each separate attack soon showed that the Plans Branch experts were right. The results of the preliminary British air offensive against Germany's towns in 1942 gave the following picture: one ton of high-explosives destroyed 2,000 square kilometres of built-up area, whilst one ton of incendiaries destroyed 13,000 square kilometres. Other similarly careful investigations showed that the destructive effect of the incendiary, weight for weight, was 4-5 times greater than that of high-explosives. The conclusion of a U.S. commission of inquiry into the effect of air warfare was very similar and gave a proportion of 5:1 in favour of the incendiary.

Even the idea, accepted by British Bomber Command, that higher casualties could be caused with high-explosives turned out to be wrong. The horrifying mass slaughter brought about by the 'knock-out' attacks of 1943-4 was chiefly due to the use of incendiaries. They were caused predominantly by incendiary attacks when many thousands of people were trapped by fire and destroyed in raging fire-storms; for example, 4,000 in Würzburg, 6,000 in Darmstadt, 7,000 in Heilbronn, 7,000 in Wupperthal, 9,000 in Weser, 12,000 in Magdeburg, and 40,000 in Hamburg. The great number of people killed in this way during the night of terror in Dresden is impossible to calculate.

There was a return to the use of improved types of high-explosive bombs against towns already largely destroyed by fire, when the aim of the attacks was to kill the remaining

inhabitants sheltering in their cellars, or drive them out of the town altogether. The very heavy type of mine known as the 'Block Buster' which prepared the way for fire was always used in close co-operation with the incendiary.

It is not altogether understandable why very heavy incendiaries, bombs weighing from 250 lb. up to 4,000 lb., were used right up to the last. These exceptionally heavy specially-constructed bombs violated the principle that not more than the required amount should be used to set fire to an inflammable objective. In consequence they rarely did much more damage than the small incendiaries and the primitive oil canister, and often even less. The explanation sometimes put forward that these big incendiaries were used as marker bombs is not accurate.

According to reliable sources, during the air war the Anglo-American bombers dropped 240,000 tons of incendiaries on towns in Central and Western Europe. In some typical fire-raids the numbers dropped reached and even exceeded the million mark.

It is not easy to estimate the future development and significance of the air-fire weapon, and the objective situation is particularly difficult to judge. But we should certainly be suspicious of those who are inclined to present the air-fire war as a unique event in history – 'once and never again'. The farther the terrible happenings of the Second World War recede into the background the less importance people are inclined to attach to the incendiary as a weapon of air warfare.

There is also an inclination to regard the air-fire epoch as ended with the arrival of the new and revolutionary nuclear bomb, but the idea that in consequence the terrible lessons of

air-fire warfare have now nothing but historical interest to recommend them to our consideration suggests a great lack of forethought.

For one thing, the nuclear bomb produces terrific heat. It is itself a fire-bomb. In fact its triggering effect is so tremendous that it could set the whole world on fire. Even the so-called 'clean' H Bomb generates tremendous heat radiation. There is less danger from fall-out, but no less danger from death by fire.

Further, there is no reason to suppose that what are now conventional incendiary weapons will not remain in use together with the nuclear bomb. The threat to the big industrial and administrative centres as concentrations of moral and material strength by the use of comparatively simple incendiary bombs was a much greater reality in the Second World War than all the various 'secret wonder weapons'.

So long as conventional weapons continue to exist – and there is no shortage of them on either side of the Iron Curtain – so long will the air-fire weapon remain a potential means of modern air strategy to reduce a whole country *ferro et igni*. And as long as this is the case, so long will it remain a matter of common sense and reasonable foresight to pay attention to this specialized field of strategic air warfare.

There is also an idea that the new towns which have arisen from the ashes of the old will offer much greater resistance to the fire weapon, and this is calculated to lull us into a false sense of security. These new steel and concrete buildings will certainly offer greater resistance to fire than the older brick, plaster and timber houses which once formed the centres of our towns, many of them beautiful examples of medieval

building. Of course, they went up like tinder in the modern air-fire war; but even now the newly-built streets and squares, often hurriedly constructed and skimped, frequently represent a high fire risk.

A combination of economic factors with the predilections of the individual architects has largely determined the shape and plan of most of our new building, and not the thought of any future fire danger, and it is probably too late to do anything about it now. You have only to look out over the newly-built towns to find ample confirmation of this.

The International Red Cross was well advised and acted with foresight when it drafted its new proposals for the protection of the civilian population in any future wars. In this draft the incendiary bomb is classed amongst those 'Weapons whose effects cannot be controlled', and as such, together with chemical, bacteriological and radio-active devices, it is a 'Prohibited Weapon'.

To conclude this macabre chapter here are a few illuminating figures. The personnel strength of the organized fire-fighting detachments maintained on a full-time footing in Germany during the last war totalled at least 150,000. At the same time an enormous amount of money was expended on the technical equipment of these largely mobile fire-fighting forces. But when one learns that the estimated material damage caused by one giant attack on a large German town was something like twenty times as great as this whole sum then it is only too clear that the possibilities of destruction by fire are vastly greater than the possibilities of coping with the danger.

CHAPTER SEVEN

Berlin – A Modern Carthage

THANKS TO its geographic situation, Berlin, as the capital of the German Empire, was spared from attack during the First World War. There was no 'air war in depth' then. The capitals of other belligerent countries, London, Paris and Bucharest, for example, were less favourably situated. However, in the period between the wars the inhabitants of Berlin were clearly warned that they could not expect to be so favoured in the event of a new world conflict. Perhaps the clearest warning of all was given in an article written in 1925 by Winston Churchill, who was to become Britain's war premier. In this article he warned his own people of the increasing danger of unrestricted air warfare, and as it was syndicated to the world Press the inhabitants of Berlin were able to read it too.

In it he wrote that everything which had happened in the four years of the First World War would have been as nothing compared with what he had been preparing for the fifth year of the war – if the war had lasted that long. The unfought battles of 1919 would have revealed a tremendous growth of the destructive forces, and thousands of planes would have bombed Germany's towns, including Berlin. This air warfare of 1919 had not taken place, but the ideas behind it still existed.

Death still waited, obedient, and ready at a word to mow down human beings in swathes. Our civilization would be laid in dust and ashes beyond hope of recovery. Perhaps next time the aim would be to slaughter women and children, or to wipe out the civilian population altogether. In the end the Goddess of Victory would ally herself to the side best able to organize this terror, and for the first time in history one group of civilised men would be in a position to condemn the other to utter impotence.

A truly terrible picture! But when Germany attacked Poland in 1939 and so unleashed the Second World War, the holocaust prophesied by Churchill did not come about at once—the reasons for this were primarily technical. And even when the opposing camps slid farther and farther into unrestricted bombing warfare, for a while at least each side restrained its bombers from attacking the enemy's capital. And, of course, the distance from even the nearest available Allied airfield to Berlin was too great for most of the bombers available at the time. Long-range strategic bombing forces were still on the drawing-boards. The number of long-range bombers available up to 1942, and their flying qualities, were not sufficient to represent any serious threat to Berlin. At the beginning of the German offensive in the west, British Bomber Command had only two hundred long-range bombers operational. And the French Air Force was even less prepared. In fact reliable information suggests that it possessed only thirty-one modern heavy bombers.

Under pressure from public opinion, the British War Cabinet abandoned its preliminary reserve and at the end of August 1940 it sent the first bombers to attack Berlin.

The First Phase of the Attack on Berlin

The first air raid on Berlin took place in the night of 25th–26th August, 1940, and twenty-two tons of bombs were dropped. By 7th September seven further attacks had been flown. Each of these nuisance raids was recorded in the official reports of the *Wehrmacht* High Command.

26th August, 1940: 'Last night for the first time enemy planes flew over Berlin. A number of bombs were dropped on the outskirts.'

29th August, 1940: 'Last night British planes systematically attacked residential quarters in the Reich's capital. . . . High-explosive and incendiary bombs were dropped killing and wounding many civilians and causing fires and other damage.'

31st August, 1940: 'In the night British planes continued their attacks on Berlin and other targets in the Reich. A number of bombs fell in the centre of the town and in working-class areas.'

1st September, 1940: 'Last night British planes attacked the Ruhr and Berlin and dropped bombs at various points. Little damage was caused, and no military targets were hit.'

2nd September, 1940: 'Last night enemy planes again attempted to attack Berlin.'

5th September, 1940: 'Last night British planes again flew over Reich's territory. An attempt to attack the Reich's capital was beaten off by heavy anti-aircraft fire. Only at two points did the enemy succeed in dropping bombs on the town.'

7th September, 1940: 'Last night enemy planes again attacked the Reich's capital; casualties and damage were caused by the indiscriminate bombing of non-military targets in the

centre of the town. The Luftwaffe has now begun to attack London with strong forces. Last night dock installations in East London were attacked by high-explosive and incendiaries, and fires were started. Conflagrations were observed at the docks and at the oil supply depot at Thameshaven.'

With this the bombing war against the capitals was in full swing. From now on it went its own way. The 'Blitz' on London, officially described as a reprisal for the attacks on Berlin, began in the night of 6th-7th September, 1940 - that is to say, five months after the beginning of unrestricted bombing and two weeks after the dropping of the first bombs on Berlin. The attack was carried on persistently up until 13th November, 1940, with forces ranging in strength from 100 to 150 medium bombers.

According to British accounts the first attack on Berlin is said to have been carried out by three fast bombers during the day, but there is no official record of this attack, which is said to have been mounted as a sort of practical joke on Goering who was due to address a great mass meeting, which is said to have been postponed for an hour in consequence.

Up to the end of 1940 there were twenty-seven further night attacks on Berlin. The biggest of these raids took place in September when 656 bombers set out to attack Berlin, though by no means all of them got there. After that the numbers of bombers engaged declined. In December only 289 planes set out, and then came a pause.

These attacks were flown chiefly with Wellington and Hampden bombers, whose maximum range would just about take them to Berlin and back. If they happened to meet strong headwinds they were unable to reach their targets and

had to turn back, and if they had miscalculated some of them would come down in the sea. As at that time there was no reliable bomb-aiming device capable of hitting a specific target after dark, bombing was a real hit and miss affair. Ostensibly the chief targets were the Reichs Air Ministry and the various railway stations. Despite the best efforts of the R.A.F. the effects of the raids were slight. In September 1940 7,320 tons of bombs fell on Southern England, including 6,224 tons on London whilst only 390 tons of bombs fell on German territory, including Berlin.

A so-called reprisal raid on Berlin in the night of 23rd-24th September, 1940, flown by 199 bombers was more effective, though as a result of bad weather only eighty-four bombers actually reached their destination. From this time on Berlin began to feel itself seriously threatened, and because at that time a good many diplomatic visits were taking place the raids were certainly a nuisance.

From the accounts subsequently given by the Spanish Foreign Minister Serrano Suñer, we know that during his visit to Berlin he was compelled to spend almost every night in the basement of the Hotel Aldon, a disagreeable circumstance which appears to have affected his political decisions. He writes: 'Civil-Defence discipline was as strict behind the lines as it was at the front. Thanks to this the German people hardly became aware of how terrible war is. Organization apparently triumphed over danger. Air warfare in those days was not very bloody, but this milder form made it more difficult for the civilian population to stand what was to follow.'

Germany's Foreign Minister was also extremely annoyed

to find his important political discussions with visiting foreign statesmen punctuated by violent bomb explosions; and this experience was all the more galling because only a little while before he had confidently announced that the war was as good as won.

Official figures relating to the period from 1st September, 1939, to 30th September, 1940, give the following picture of damage and casualties for Berlin: 515 dead and perhaps twice as many injured, 1,617 buildings totally destroyed and a further 11,477 severely damaged.

The Winter Directives for Bomber Command issued at the end of October 1940 put Berlin as fifth on the list of main objectives of the R.A.F., well behind oil targets, shipyards, shunting yards and the sowing of mines; but all the same it went on to say that when attacks are flown against towns as such they should seek out closely built up residential quarters in order to do the greatest possible material damage and at the same time demonstrate the power of the R.A.F. to the enemy.

In January 1941 only 195 bombers were sent against Berlin, and after this the bombing attacks on the two hostile capitals ceased for a while. On its part the Luftwaffe abandoned the Battle of Britain as too costly and insufficiently rewarding. In addition, of course, it was now being generally regrouped to take part in the attack on Russia.

The first phase of the air attack on Berlin was over. The city had suffered very little damage, and, relatively speaking, casualties had been low. But, of course, they were quite bad enough for those who were unfortunate enough to be, or have dear ones, amongst the victims.

The R.A.F. Hesitates

The R.A.F. used the very welcome respite chiefly for developing a strong strategic bomber force, and it made use of all the experiences, both favourable and unfavourable, of the previous operations of the Luftwaffe over Britain and its own planes over Germany. As the nights grew shorter long-range night attack by the heavy bombers available then became more and more difficult — though after the attack on Russia the R.A.F. did fly one or two further attacks on Berlin, but reluctantly and only under Russian pressure. This was in the autumn of 1941, and in the meantime the defence had grown considerably stronger and made the raids costly and unremunerative operations.

Amongst these autumn 1941 attacks was a raid flown in the night of 7th–8th September. Bombs were dropped on Potsdamer Railway station and on Potsdamer Platz, both in the centre of Berlin. A 4,000-lb bomb dropped on Pariser Platz killed almost a hundred people. Another raid took place in the night from 7th–8th November — and residential districts in Spandau and Moabit were attacked. This was also a very costly raid, and the attacking force lost twenty-seven planes, including, for the first time, a number of modern four-engined heavy bombers.

Britain's Bomber Chief was not at all satisfied with the results of these Autumn 1941 attacks, and in his book *Bomber Offensive*, he writes (p. 135): 'The last attack on Berlin had been in December 1941, at a time when such an attack could only have had a political effect, and our losses on that occasion were ten per cent. . . . Four hours of flying over very heavily

defended areas . . . its ground defences were as heavy as anywhere in Germany . . . it was also far from densely built up . . . (which) means that only a substantial force of heavy bombers could produce any concentrated or serious damage.'

The swift victory of the German Army, greatly assisted, and in fact rendered possible in the first place, by the close operational support of a strong tactical Luftwaffe, had surrounded Germany with a wide belt of enemy territory, which in the then stage of technical development, made it impossible for enemy bombers to carry the war successfully into the heart of Germany, and for the time being therefore Berlin was fairly safe.

Strategic air warfare against Germany in 1942 began with two raids in the night of 16th-17th January and 17th-18th respectively, using a force of 368 bombers and a new and improved method of attack with sky-marker flares, the so-called Christmas trees, released by special Pathfinder planes. Nevertheless the attacking force lost twenty-two planes, or six per cent. After this Air Chief Marshal Harris refused to fly any further attacks on Berlin for the time being because they interfered with his preparations for a systematic offensive against West German towns. This new air offensive began with a series of experimental attacks on Lübeck, Rostock, Cologne, Essen and Osnabrück respectively, and continued in the second half of 1942 with repeated area-bombing attacks on other North-West German towns.

During this period Berlin was left in peace. The capital was still a magnet and its population had increased by 112,000 since the beginning of the war. A number of dwelling houses which had been destroyed in the previous bombings

had been rebuilt, but there was neither sufficient materials nor labour power available in war-time to provide new housing on an adequate scale.

Having no suitable long-range bombers the Soviet air force took no part in the air offensive against Berlin.

In the autumn of 1942, once again for political reasons, British Bomber Command was urged to renew its attacks on Berlin. But at this time Bomber Command had only eighty four-engined, long-range bombers suitable for such difficult missions.

1943: Beginning of the Battle of Berlin

In 1943, the year of Britain's main air offensive against Germany's towns, the R.A.F. was finally ordered to step up 'the Battle of Berlin' and press the attack home vigorously. During the winter months at the beginning of 1943 Berlin was subjected to a number of attacks of varying intensity and with varying techniques. They were probably part of the preparations for the main offensive to be launched in the late autumn of that year. The most important of these raids were:

17th-19th January: two not particularly heavy raids on successive nights. They were followed by a German reprisal raid on London, the first after a long pause, and the planes engaged did not succeed in reaching their objectives.

1st-2nd March, 1943: double attack, for the first time chiefly with incendiaries, supported by the very destructive 4,000-lb. 'Block Buster' bombs, consisting almost entirely of high-explosives. Main targets: Wilmersdorf and the centre.

Hedwigskirche and four other churches gutted. The attacking force lost 4.6 per cent of its effectives.

27th–29th March, 1943: heavy double attack without any recognizable target. First animal victims in Berlin's Zoo. The Headquarters of German Air Reconnaissance in Teltow on the outskirts were gutted.

Fatal casualties in Berlin throughout all the air attacks totalled 1,700; 700 of them during the March attacks in 1943. In the fourth year of the war the danger of a fire catastrophe existed for Berlin too, though so far the damage done had been scattered and, compared with the vast extent of the capital, not of very great importance. The sight of gutted and ruined houses were not yet a matter of course in Berlin as they already were in the towns of Western Germany. However, it was calculated that to make good the damage and clear up the bomb sites would take from six to eight months.

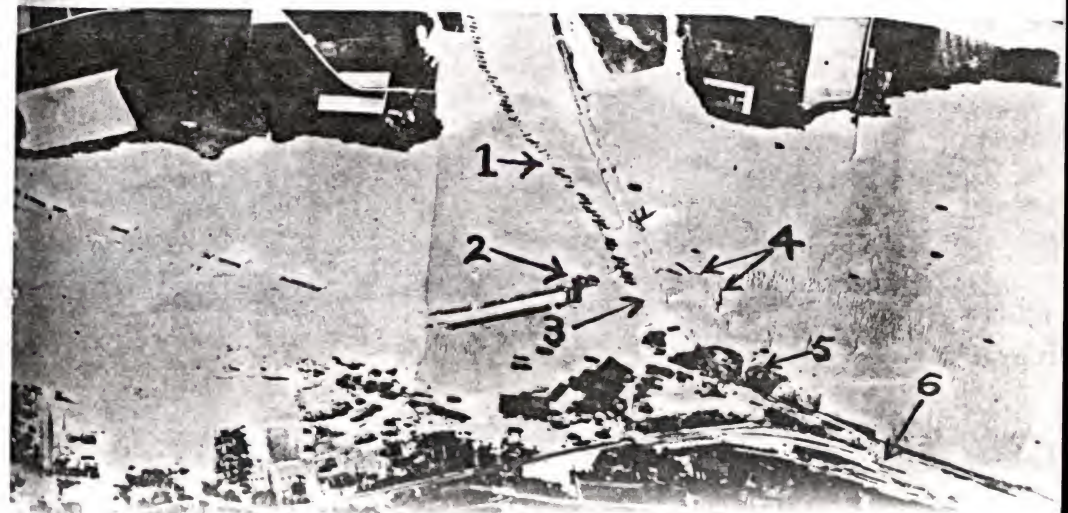
Three further attacks on the Reich's capital took place in June, and another two in July. They were carried out in the short summer nights by fast bombers with improved radar bomb-aiming devices, but the damage done was not very great.

Then at the end of July and the beginning of August 1943 came the mass attacks on Hamburg, leaving vast areas of the town in ruins. These attacks marked a turning point in air warfare and represented a terrible warning for Berlin. But although since the beginning of 1943 Allied bombing capacity had been steadily increased by the arrival of new bomber squadrons from the United States, it was still not sufficiently large to deliver blow after blow with equally destructive



The Möhne Dam after the raid by Britain's 'Dam Busters.' Water has poured through the breach, destroyed a power station, and flooded land below the dam.

The Ruhr Valley thirteen miles downstream from the bombed Möhne Dam. The following damage is indicated: 1. a road submerged, 2. electricity works cut off, 3. a road bridge destroyed, 4. a railroad bridge destroyed, 5. railroad coaches wrecked, and 6. railroad sidings flooded.





The Commander in Chief of the R.A.F. Bomber Command, Air Chief Marshal Sir Arthur Harris (*standing, left*), listens to the interrogation of one of the 'Dam Buster' crews after the Möhne raid.

German anti-aircraft fire and tracer bullets weave a pyrotechnic display during a heavy raid.



effect against other large towns and thus develop the method of area bombing into a weapon which might decisively affect the course of the war.

British Bomber Command began its preparations for the final Battle of Berlin at the beginning of September 1943. It was under a certain amount of public pressure, because since the big raids on Hamburg press clamour for the similar destruction of Berlin was increasing. But the R.A.F. was anxious to make use of the longer winter nights, because owing to the long distances to be flown Berlin was still a very difficult target.

The attack which took place in the night of 17th–18th August, 1943, was actually a feint to draw the night fighters away from the bombers which were launching the attack against the main target for that night: the scientific experimental station for V weapons at Peenemunde.

One month after the raids on Hamburg, British Bomber Command mounted three attacks on Berlin within the ten days, from 23rd–24th August to 3rd–4th September, in which 1,647 heavy bombers took part. One thousand seven hundred tons of bombs were dropped in the first of these raids on 23rd–24th August; 1,450 tons on 24th–25th August; and a thousand tons on 3rd–4th September.

During the first of these raids the bombers succeeded in concentrating on the centre of the town, but in the other two they failed, though the last of the three did a good deal of damage in Siemensstadt, Mariendorf and Lichterfelde on the industrial outskirts. Up to this time only about half a square mile of built-up area had been devastated.

A Million People leave town

These last attacks suited Goebbels very well, because as Gauleiter of Berlin he was anxious to secure the voluntary evacuation of those sections of the population whose presence was not essential for war purposes, and in particular, women, children and old people. The now threatened town was to be cleared as far as possible of unnecessary people. A vigorous campaign began, and prominent citizens were invited to set others a good example. Within the space of three months about a million people did leave the city; and, amongst other measures, the schools were closed. An interesting and not unimportant point should be noted here: the evacuation of Berlin, and of a number of other big towns, was not the work of the slow and rather cumbersome Civil-Defence organization; it took place at the direct instance of the National Socialist Party. However, whilst the departure of the 'useless mouths' was understood and approved by public opinion as a necessary lightening of the burden, the secret plan for the evacuation of government departments and other official bodies, which began in August, caused a good deal of resentment and alarm, and the propaganda campaign organized by the National Socialist Party to allay the fear and resentment met with little success.

The actual Battle of Berlin began with full force in the night of 18th-19th November, and lasted until 2nd March, 1944.

The leaders of Bomber Command were well aware that the destruction of Berlin would be a difficult and costly task. The target was a capital city with an area of 28 square miles and a

diameter of between 20 and 25 miles - even bigger than London! - lying far behind the enemy lines and heavily defended by a powerful night-fighter force and concentrated anti-aircraft defences. Technical resources for mounting the operation were still limited, but it was nevertheless hoped that it would exercise a decisive effect on the course of the war. In consequence the whole allied world both East and West awaited its upshot with impatience. It was the biggest strategic air operation since the offensive against the Ruhr.

The areas chosen for bombing were the administrative quarters and government buildings in the centre of the city, the districts with the greatest concentrations of population and industrial plant, about 103 factories, chiefly in the engineering and electrical industries, listed by the economic experts as the most important.

Four hundred and forty heavy bombers took part in the first attack, and 402 of them succeeded in reaching their objectives and dropping 1,593 tons of high-explosives on the government quarters. Nine bombers were lost, or 2.2 per cent of the attacking force. In the same night a second strong attack was launched against Ludwigshafen; the primary intention of this subsidiary attack was to draw off the night fighters.

The next two attacks, launched in the nights of 22nd-23rd November and 23-24th respectively, were also heavy, and fatal casualties in Berlin amounted to 1,200.

Goebbels' Diary contains dramatic and authentic descriptions of the bombing in the government quarters, in the closely-built-up residential areas, and on the tank works

Alkett, which had been transferred from the Ruhr to Berlin for greater safety. Fire Brigades were called in from outside, sometimes from places as far distant as Hamburg and Breslau, in order to help fight the conflagrations which developed, whilst 50,000 men of the Wehrmacht helped to clear the streets of debris.

The November attacks cost Berlin 2,966 dead, 68,262 buildings totally destroyed, 5,837 very badly damaged and 6,533 less badly damaged. 400,000 people were made homeless. Despite this the authorities had to take repeated measures to stop the return of evacuated people to the city, and for this reason the schools remained closed. On the other hand, government departments and so on were now instructed to carry on their work in Berlin as long as it was at all possible.

In the night of 2nd-3rd December a new and highly concentrated attack took place which lasted only forty minutes - 650 bombers took part and 458 reached their objectives. Such attacks continued at shorter intervals until the end of the year.

The Height of the Battle of Berlin

Six heavy attacks took place in January 1944, two of them with over 400 bombers each - 22nd-23rd January and 27th-28th January - and a total of 9,300 tons of bombs was dropped. The bombing concentration was now steadily increasing in time, space and material.

The heaviest of the February attacks took place in the night of 15th-16th February, when 2,642 tons of bombs were

dropped - 891 bombers took part in this raid, and 806 of them reached their objectives. The attack lasted only thirty-eight minutes and the main target was the industrial suburb of Siemensstadt.

On 4th March the first experimental daylight attack was flown by the U.S.A.F. with thirty Flying Fortresses escorted by strong fighter protection. The first really big daylight attack by the U.S.A.F. took place on 6th March, when 672 four-engined Flying Fortresses and Liberators flew in with fighter protection and dropped 1,600 tons of bombs, chiefly high-explosive, on industrial targets. Only 200 Luftwaffe fighters were available for operations against this U.S. air armada and its powerful force of escorting fighters.

On 24th March the offensive against Berlin was temporarily halted to allow the Allied air forces to be re-grouped for the forthcoming invasion. Bomber Command announced that so far 25,000 tons of bombs had been dropped on Berlin.

During the Battle of Berlin sixteen mass attacks were launched. They cost the R.A.F. 537 of its most up-to-date long-range bombers and almost 4,000 trained men: 6.2 per cent of the attacking forces, and 5.4 per cent of the personnel engaged. This means that a bomber could fly an average of only fifteen missions. During this period fifty subsidiary attacks were launched against other towns, usually in order to confuse the defence as to the direction of the main attacks.

The losses on the German side were 6,166 dead and 18,431 seriously injured; 1.5 million homeless, and the destruction of approximately 3.5 square miles of built-up area.

Forty-three of the 103 factories listed as of material importance for war production were more or less seriously

damaged, whilst, in addition, 282 out of 573 less important factories were also seriously damaged. The traffic system, the public services and administrative centres were badly dislocated, but, astonishingly, in view of all this, production continued to rise steadily – thanks chiefly to rationalization and various organizational measures.

The morale of the civilian population – the other main objective of the operation – also stood up to the test magnificently; a fact generously acknowledged by the enemy. For example, Richards and Saunders write in Vol. III, p. 23; of *The R.A.F. 1939–1945*: 'At no time do the Berliners appear to have lost heart during their ordeal, and they continued to the end to exercise their caustic brand of humour at the expense of their defenders.'

It must be difficult to credit this in view of the facts, and to believe that in such circumstances a shred of humour could have been left alive amongst the population, not to speak of a defiant spirit which refused to let itself be broken. For example, when two like-minded citizens met after a particularly devastating raid the gag of the moment was to make a sweeping gesture to take in the devastation and repeat a previous appeal made by the Führer himself: 'Give me four years and I promise you you won't recognize your towns!'

And Goering, who had once boastfully declared that you could call him a Dutchman if enemy planes ever succeeded in breaking through his defence barrier in the West, was mocked every time the sirens sounded: 'The Dutchman winding his horn!'

And in those grim days friends and acquaintances parted

with the amiable if unsentimental exhortation: 'See you're left over!'

At the entrance to a gutted warehouse some wit affixed the notice, 'Open day and night now.'

For some reason or other there was a period when an unusually large number of badly-fused ack-ack shells exploded on the ground in South Berlin, and the popular comment was: 'Division of labour: Tommy fixes the North; our flak the South.'

In the beginning the official broadcast used to announce consolingly: 'There are no enemy planes over Reich's territory.' Long after this was impossible the Berliner was still using a slightly amended version: 'There are no German planes over Reich's territory.'

There were a host of such dry and witty observations, though, of course, most of them had to be kept strictly for private consumption. The jibe was the only weapon of defence the Berliner had left, and he used it freely, often with succinct and stinging effect, wryly and drily exposing the ludicrous excesses of a mendacious official propaganda which by this time had even lost confidence in itself. And when the bombing finally ceased and the efforts to clear up the devastation resulted in the piling up of huge mounds of debris ('Mount Brickbat') the laconic comment of the Berliner was: 'A Third World War and Berlin's in the Alps!'

The British Premier himself has answered the question as to what use it all was. In Vol. V of his work on the war (p. 460), he writes: 'Bomber Command pressed home its attacks with undaunted courage and determination in the face of fearful difficulties. The weather was appalling, and

most of the bombing had to rely on the radar eye . . . The night photographs taken by the bombers at the moment of bomb release showed nothing but clouds. The same disappointment befell the daylight flights over Berlin of the Photographic Reconnaissance Unit. We knew from the admission of Germans themselves that great destruction was being caused, but we could not judge the relative success of our sixteen major attacks by comparing the photographic evidence of each. We had to wait until March 1944 to obtain photographs clear enough for the damage to be assessed. It fell short of what had been achieved in Hamburg.'

And Air Chief Marshal Harris writes in his book (p. 186-7): 'In all, my Command made sixteen major attacks on the German capital. The whole battle was fought in appalling weather and in conditions resembling those of no other campaign in the history of warfare. Scarcely a single crew caught a single glimpse of the objective they were attacking, and for long periods we were wholly ignorant, except from such admissions as the enemy made from time to time, of how the battle was going. Thousands upon thousands of tons of bombs were aimed at the Pathfinders' pyrotechnic sky markers and fell through unbroken cloud which concealed everything below it except the confused glare of fires. Scarcely any photographs taken during the bombing showed anything except clouds; and day after day reconnaissance aircraft flew over the capital to return with no information. We knew, of course, from what the Germans said, that we were hitting Berlin, but we had little idea of which attacks had been successful and which had gone astray. Then, after six attacks, a reconnaissance aircraft did bring back some not

very clear photographs which showed that we had at last succeeded in hitting the enemy's capital hard; there were many hundreds of acres of devastation, particularly in the western half of the city and round the Tiergarten. Then the clouds closed again on Berlin, and the Command made eight more attacks without any means of discovering whether all or any of them had been as successful as the first six raids. It was not until March was far advanced and the nights were too short for any but Mosquito attacks on Berlin that an aircraft brought back more photographs and it was possible to assess the results of the Battle of Berlin as a whole.

'Judged by the standards of our attacks upon Hamburg, the Battle of Berlin did not appear to be an overwhelming success, with many times as many sorties, a far greater bomb load, and ten times as many casualties. We appeared to have succeeded in destroying about a third of the acreage destroyed in the attack on Hamburg; the actual figure, as far as it could then be estimated from air photographs, was 2,180 acres, over and above the 500 or so acres destroyed before the main Battle of Berlin began.'

The Third Phase: Collapse of the Defence

Then for several months all available bombers were placed at the disposal of the Supreme Commander to support 'Operation Overlord', the invasion of Europe, and so for a while Germany's towns, including Berlin, enjoyed a respite. From the end of March on, heavy attacks such as those which

had previously been flown, no longer took place; at least for the time being.

Apart from nuisance raids carried out by thirty or forty Mosquitos at a time – which were, however, quite a burden for the already sorely tried nerves of the Berliners, the summer of 1944 passed in comparative peace for the inhabitants of the Reich's capital. Light bombers such as the Mosquito could fly from their bases to Berlin and back in about four and a half hours. They each carried 1·8 tons of bombs, were very fast and flew at a height of about 40,000 feet, which made it practically impossible to intercept them.

On 13th June, 1944, Britain's Southern Counties and Greater London came under bombardment from V.2s. Thereafter the Mosquito attacks on Berlin became rather more frequent, but the often expressed opinion that the V.2 and V.1 attacks on England turned out to be a dangerous boomerang for Germany's towns, and in particular for Berlin, has no basis.

According to Harris, for two months after 'D' Day (6th June) not a bomber was available for use against any German town, but on 25th September, 1944, Bomber Command ceased to be under the orders of the Supreme Commander Eisenhower, and immediately Bomber Harris turned at once and with great energy to his old objectives: Germany's towns. At the same time there was a more systematic offensive against her oil plant and other key-industry points but despite these special objectives the main target was once again Berlin.

In this new phase of the offensive the R.A.F. occasionally flew daylight missions whilst the U.S.A.F. sometimes took

part in night operations. By this time the Luftwaffe had been fought almost to the ground, and in consequence Allied air attacks now ran fewer risks than had previously been the case.

Amongst the new heavy daylight attacks the one flown on 6th October, 1944, stands out. In just about thirty minutes 1,250 four-engined bombers laid carpet after carpet of bombs over the city.

There are a number of graphic and authentic descriptions of this last Berlin war winter, which is already rapidly receding into history. Living amidst the ruins of their city the Berliners still hung on grimly and gallantly. Life had really grown intolerable, but all the same it still went on, whilst all around a vast city sank steadily into ruins. Its nights and now its days, too, resounded to the lugubrious howl of the warning sirens, followed very quickly by the dull explosions of bombs. Destruction on a scale previously unparalleled in history ground steadily on.

'Whole districts collapsed into rubble, houses fell into heaps and went on smouldering. After an attack the dead would be dragged into piles by their feet. There was no water, no light and no gas; nothing but the sound of sirens and the deep drumming of bombers flying in from the Hamburg-Brunswick area. During the day they were American, and at night the little Mosquitos flew in from England. And all the time Nazi propaganda churned out tirelessly: Frederick the Great, the oath of loyalty to the Führer, and, finally, "The German Salute".' (G. Benn, *Doppelleben*.)

Hitler, who had long since got used to drawing the curtains when he passed through devastated areas, now had

to look at his devastated capital for the first time when his headquarters were shifted from East Prussia to the Taunus – the Allies already had command of the air and he had to move by rail. According to witnesses his only comment was that he hadn't imagined it 'like that'.

The endless series of attacks in the final and most destructive phase constantly overlapped and can no longer be effectively separated. From February 1945 on, the city was attacked almost uninterruptedly from the west and south: and from the middle of February to the middle of March the attacks went on for thirty successive days and nights.

Large-scale attacks flown by heavy bombers at night were constantly supplemented by smaller daylight attacks as the fronts moved in nearer and nearer to the heart of Germany. Nightly nuisance raids flown by perhaps up to sixty Mosquitos now took place with increasing frequency. In the period from 1st August, 1944, to 26th April, 1945, 205 such attacks were flown against thirty-nine German towns, ninety-four of them against Berlin – in February there were twelve attacks, in March twenty-nine, and in April twenty-six. In this storm of almost uninterrupted air attacks it is possible to pick out only one or two of the heavier raids on Berlin.

3rd February; 21st and 26th: big raids by almost 3,000 bombers.

6th–7th March: big double raid, and in the meantime constant Mosquito nuisance raids.

15th March: 1,350 Flying Fortresses escorted by 750 long-range fighters dropped nothing but large-calibre high-explosive bombs and mines, many of them with time fuses. Objectives: North Berlin and Oranienburg.

18th March: thousand bomber attack on the Slesischer and Stettiner railway stations in the east-end of Berlin. Four thousand tons of bombs dropped. Three hundred bombers raid industrial works in the north.

20th March: Russians step up their bombing raids on the centre of Berlin.

24th March: heavy night raids on West Berlin. Daylight raid by 150 bombers flying in from Italian airfields.

Up to the day the Red Army entered Berlin, Allied figures show that the city was attacked from the air on 363 separate occasions, four of these attacks being very heavy. Altogether 45,517 tons of bombs were dropped in these attacks, chiefly high-explosive. This is six and a half times the weight of the Eiffel Tower.

These figures make Berlin the most bombed town in Germany. Essen comes next with 36,420 tons, then Cologne with 34,711; Duisburg with 30,025; Hamburg with 22,850; Dortmund with 22,424; and Stuttgart with 21,016. Bomber Command flew 18,468 individual missions during these attacks, of which 16,556 reached their objectives. On an average losses were four per cent, rising to 6.4 per cent, which was relatively high, since these figures do not include planes lost at the take-off and on landing, and from various other causes.

Air Chief Marshal Harris sums up the total operation as follows in his book: 'When complete photographic cover of Berlin was obtained at the end of the war, it was found that 6,340 acres of the main built-up areas had been destroyed. Of this total, 1,000 acres had been destroyed in American daylight attacks, and subsequent Mosquito attacks also did

considerable damage, but all the rest must have been done in the main Battle of Berlin.

On 25th May, 1945, Harry Hopkins, personal friend and envoy of President Roosevelt, was on his way to Moscow. His plane flew low over Berlin and he had an opportunity of seeing the damage for himself. Deeply moved he noted in his diary: 'Berlin is a second Carthage.'

Casualties and Residential Damage

The previous general sketch of the fate suffered by Germany's capital must now be supplemented as far as possible by verified figures.

It is impossible to discover the exact number of air-raided casualties because, for one reason or the other, almost all the records have been lost. The figures in the files dug out of the former Reich's Statistical Office are incomplete because they record only the names of those who were formally registered as dead at the various local Register Offices – a total of 14,186.

The most reliable overall estimate is that of Berlin Police Commissioner E. Schnell, who was in a particularly favourable position to collect the necessary statistics. According to him, by 22nd April, 1945, around 50,000 Berliners had lost their lives as a result of enemy air action. However, even this high figure includes only those who were killed outright or who died of their injuries within three days. They do not include Berliners who lost their lives after 22nd April as a result of artillery bombardment and the subsequent street fighting.

The number of missing, presumed dead, is impossible to discover. According to the general experience of the bombing years, the number of seriously injured persons was probably about twice the number of dead.

Taking the total figure for fatal casualties in Berlin as in the neighbourhood of fifty thousand, this represents 1.8 per cent of the population, which had been reduced by evacuation in the previous two and a half years from 4.5 to 2.8 millions. This percentage is noticeably higher than the 1.3 per cent established as the population losses in the Ruhr, where the experience of the trained mining population of the Westphalian industrial area helped to save many lives by the expert construction of air-raid shelters.

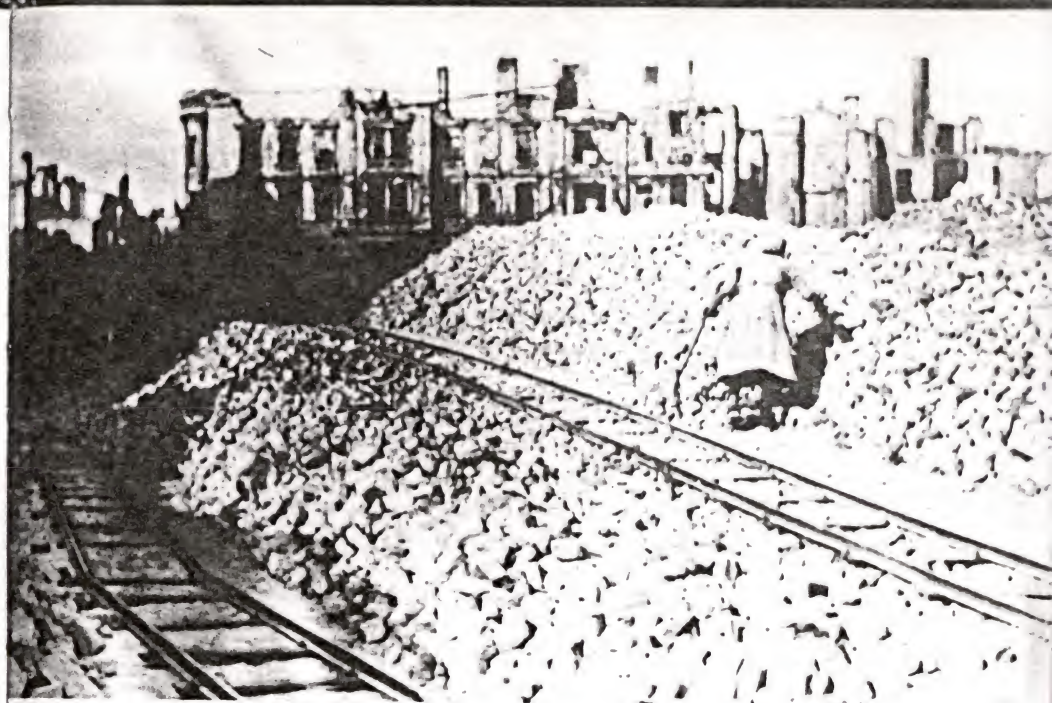
However, the percentage loss of life suffered by the civilian population of Berlin must be regarded as relatively low by comparison with the extent and intensity of the attacks to which it was subjected, and the fact that it was kept so low does great credit to the efficiency of official civil-defence measures, and even more to the admirable coolness and discipline of the Berliners themselves, most of whom had no greater protection than that offered by hurriedly strengthened cellars. Only a very small proportion of the population enjoyed real security in bomb-proof bunkers such as the one in the Tiergarten.

The material losses as a result of the bombings are easier to estimate, both in Berlin and elsewhere. According to the figures of Berlin's City Council, at the beginning of 1943, there were 1,562,641 dwelling houses, with a total of 5,185 rooms, i.e. before the beginning of the really heavy attacks on the city.

By the end of the war there were 950,000 houses still standing, with 2,940,000 living-rooms. Thus as a result of the war, and chiefly due to enemy air attack, 612,000 houses with 2,245,000 living-rooms had been destroyed, and Greater Berlin lost 39·2 per cent of its original houses, and forty-three per cent of its available living-rooms.

The damage was spread over the whole town, and no district was entirely spared, but the heaviest damage was suffered by Bezirk Mitte, the centre of the town, which became known as the 'Waste Land'. Total destruction here rose to seventy per cent. For example, in one sub-district of Bezirk-Mitte 804 houses out of a total of 1,137 were completely destroyed. At the end of the war there were six hundred people still living in the 'Newspaper Quarter' (between the Linden, Schutzen and Zimmer Strassen) which is in the town centre, known as 'the City'. In Bezirk Tiergarten, a better residential quarter lying more westward, total destruction was 'only' forty-eight per cent. The outer districts did not suffer so heavily. For example out of 11,714 houses in Spandau only 583 were completely destroyed, and as many rendered uninhabitable. Eighty-five per cent remained occupied.

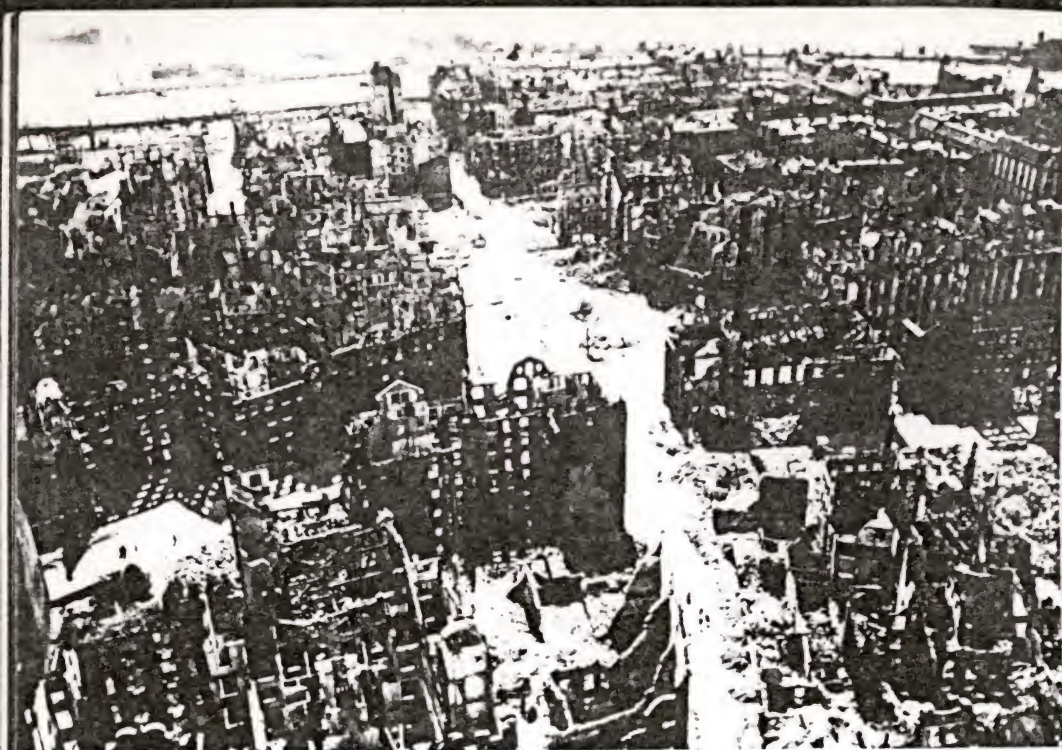
If the numerous huts, sheds and other emergency housing is taken into consideration then the loss of housing space is seen to be even greater than the figures mentioned; and, in fact, the Statistical Office estimates the loss of housing space since the beginning of the attacks at fifty per cent – and this does not take into account the great lowering of housing standards as a result of war damage to still habitable premises. With fifty per cent therefore, Berlin ranks with the towns of



A typical scene in Berlin, shortly after the war. Tracks were laid through the rubble to aid in the clearing away of debris.



Fragments of the Hercules Fountain in Berlin's Lützow-Platz.



A view of the gutted city of Hamburg.

A monument to the 55,000 people of Hamburg who lost their lives in the bombing. The inscription reads: "May those generations who come after us be spared this. May this mass grave be a warning and exhortation to humanity."



West Germany, such as Hamburg 53.3 per cent, Essen 50.5 per cent, Dusseldorf 50.9 per cent and Hanover 51.6 per cent. Even so, it is still better off than a number of other big towns: for example, Cologne with seventy per cent, Duisburg with sixty-four per cent, Kiel with fifty-eight per cent, Cassel with sixty-four per cent, Darmstadt with 61.6 per cent; and Dortmund with sixty-six per cent.

Industrial Losses

The war literature of the victorious powers seeks to justify the devastation of civilian Berlin by the military necessity of destroying the war industries established there. Now it is an acknowledged fact that it was hardly ever possible to carry out an aimed attack on Berlin. And where, towards the end, a number of raids with specified targets did take place in daylight, for example, against isolated industrial works in the north of the town, the attackers were often misled by sixteen dummy plants, which were not recognized as such for quite a long time.

The R.A.F. preferred 'barn-door targets' in the shape of whole districts to pin-pointed military and industrial objectives, because with its method of night raiding it was just not in a position to hit anything else with certainty. The British Bomber Chief is quite frank on the point, and in his book he writes: 'But it must be emphasized that in no instance, except in Essen, were we aiming specifically at any one factory during the Battle of the Ruhr; the destruction of factories, which was nevertheless on an enormous scale, could be regarded as a bonus.'

In Berlin, too, the aim of the bombings was the destruction of as many dwelling houses as possible; in the town in general and the town centre in particular, although it was well known that between seventy and ninety per cent of such smaller factories and workshops as were situated in these districts were not engaged in war production proper. Of course Berlin was an industrial city; in fact with 575,000 of its inhabitants industrially employed (1936 figures) it was actually one of the biggest industrial towns in Germany. However, its other functions as the capital city, and as the political, economic and – to a great extent – cultural centre of the then existing Reich, provided the major source of existence for its inhabitants.

At the end of the war the Allied occupation authorities were astonished to discover that in spite of the vast bombing sixty-five per cent of Berlin's factories, etc., were still in working shape, which explains how war production managed to hold out for so long in Berlin without any material decline. As heavy as the bomb damage was, the post-war process of industrial dismantling, intended to complete the destruction of an economy built up gradually by the work of many generations, was much more effective.

For example, when the process of dismantling in the electro-technical industry was completed only fifteen per cent of the 1936 productive capacity was left, and that only in small and medium undertakings; all the big works had been dismantled entirely.

In the engineering industry twenty per cent of the machine-tool productive capacity was destroyed by bombing and seventy per cent by the subsequent dismantling. The real

destruction was brought about demonstrably only after the war by this ruthless process of dismantling, which, as the U.S. Strategic Bombing Survey pointed out, settled the problem of post-war industrial production in Berlin too – by practically abolishing it altogether.

The Loss of Art Treasures

The artistic and historical possessions of the German capital suffered terribly as a result of the indiscriminate bombing. Works of art of international importance, including many unique creations of the European spirit were destroyed beyond hope of recovery or repair. No complete list of these losses has yet been drawn up. Many of the noblest achievements of European urban architecture, once the pride of the whole civilized world, were utterly destroyed, including the Dreifaltigkeits Church, Monbijou Palace, the Home Office, the Berlin Börse, the Streitsche Institute, Kolserstrasse, the Prince Karl Palace, the Dutch Palace, Knodelsdorff House, the Kreutz Palace, the Blücher Palace, the Dönhof Palace, the Foreign Office building, and the Royal Palace – this palace was gutted but the outer walls were left standing, only to be pulled down in 1950 at the orders of the authorities in the Eastern Zone.

One lesson stands out quite clearly from the bombing of Berlin: if the bombers had chosen their targets instead of bombing indiscriminately they could have obtained far greater military results at less cost to themselves and with

vastly less unnecessary damage. This is a lesson of importance for the future.

Berlin, the political centre of Germany, has had to fight for its life on two occasions and still has to continue fighting to maintain its identity every day in this post-war period. It has suffered all its tribulations with unbroken courage and then buckled down with indomitable determination to the vast job of rebuilding – in so doing it has earned the right to remain Germany's capital in the future as it was in the past.

Why Berlin did not burn

Why the Reich's capital did not burn is a question which has occupied writers on air warfare since the end of the war, and so far they have not arrived at any entirely satisfactory conclusion.

First of all perhaps, the question is not as accurately formulated as it might be, since as it stands it might imply that the capital did not suffer as badly as Germany's other towns and cities.

And to some extent, too, Berlin did burn; there were area conflagrations, some of them very great. The only thing was that they did not spread indefinitely. Nevertheless, according to expert calculation, seventy-five per cent of the total damage was caused by fire.

More accurately formulated the question would be: why didn't the various area conflagrations link up into one vast conflagration in Berlin as they did in Hamburg, Bremen, Cassel, Magdeburg, Leipzig and other big towns?

The attackers recognized from the first that the urban layout of Berlin was different from that of most other big towns in Germany, and less susceptible to fire, and that they would therefore have more difficulty in their attempts to destroy it. Berlin was more modern, more spaciouly and more solidly built, more systematically planned, better articulated and more hygienic. The U.S. experts attached to the Allied air staffs clearly recognized that the residential areas built in a circle round the centre of the town would not be so easy to turn into one great sea of fire, and they calculated that because of the greater solidity of construction and the better planning of the districts from the standpoint of fire prevention, twice as many incendiaries would have to be dropped to obtain the same results in a similar area. But the leaders of the R.A.F. favoured the high-explosives, and the U.S. experts were unable to get their point of view accepted.

Even the closely built-up areas in Berlin were not so susceptible to fire as most town centres, particularly in the ports, where urban development had been hampered for hundreds of years, by medieval defensive walls. The result was that the area within those old walls was more and more closely built up. It is true that in the second half of the nineteenth century broader streets were laid out and bigger blocks erected in the hope of achieving a looser and more spacious lay-out, but land speculation and other commercial motives led to the construction of rearward premises in order to use up every available square yard of space, and to the unforeseen result that even the rebuilt quarters of such towns were often, despite their fine façades facing on to the main streets, not much better off for space than the centres of the old towns.

Even in Berlin, a much more modern town, there was a good deal of this rearward building, and behind the big houses in the main residential quarters there were usually what were called 'garden houses'. However, the situation was not so bad as in the old 'Baedeker' towns with their ancient warrens. In addition, the backyard or 'garden' houses in Berlin were hardly less solidly built than the monumental front houses, though they certainly contained far more rooms. However, from the standpoint of 'do-it-yourself' fire protection by the inhabitants themselves this was not a disadvantage, because there were always more people on the spot at once to extinguish fires before they got a chance of taking hold. Further, there were practically no 'slums' in Berlin, and the ancient timber-frame house, particularly susceptible to fire, was almost non-existent.

On the whole therefore Berlin was a modern town; in fact most of it had been built towards the end of the nineteenth century and in the first part of the twentieth. In consequence, the relative modernity of its buildings, its more dispersed character, its natural fire-breaks, and various other local factors happily prevented the development of large-scale area conflagrations, and there were none of the terrible 'fire-storms' that devastated other towns.

Further, Berlin was not seriously attacked from the air until later in the day and its citizens therefore had time to develop their civil-defence system, and both its citizens and its authorities used this time to good purpose. It made a great difference whether towns like Wuppertal, Darmstadt, Königsberg, Freiburg, Potsdam, Heilbronn or Dresden suffered a sudden large-scale incendiary attack for the first

time, or whether, like Cologne, Berlin, Düsseldorf, Essen, Hanover, and many others, they had been the previous target of numerous smaller raids and had a certain amount of experience. Where the attack was sudden and heavy it often proved overwhelming precisely because of this lack of experience in active and passive defence, with the result that both damage and casualties were higher than they need have been. Sometimes, in fact, the shock of such a sudden devastating attack was primarily responsible for the ensuing catastrophe.

The first really heavy incendiary attack hit Berlin in November 1943, that is to say, towards the end of the fourth year of the war, by which time the Berliners had to some extent become inured to tribulation and knew just what to do. A highly efficient organization, including fire-fighting equipment, had in the meantime been built up and in this respect Berlin was hardly behind the Ruhr. In fact in 1943-4 Berlin was probably better protected against incendiary attack than any other town in Germany.

Chronicle of the Bombing War 1943-5

Review of 1943

NINETEEN FORTY-THREE was the year of the main offensive against urban Germany. In this phase of the air operations the strength of the attack increased; the bomb loads per plane rose from over a ton, to over two tons, and then up to three and a half tons. And there were some specially constructed planes which could carry up to ten tons. Towards the end of the year R.A.F. Bomber Command was using up to 717 heavy four-engined bombers on its raids, whilst by this time the Americans had a hundred heavy four-engined bombers in service.

The attacks were becoming more concentrated and more destructive and the bombers were penetrating farther and farther into the heart of Germany.

Relative bomber losses were declining, though they were still high. In 1942 the R.A.F. lost one heavy bomber for every forty tons of bombs dropped. In 1943 a considerable improvement was achieved: one bomber to every eighty tons of bombs. During 1943 the operational strength of Bomber Command increased by fifty per cent, and by October the increase in the number of planes taking part was very noticeable.

During 1943 the R.A.F. dropped a total of 226,513 tons of bombs on Germany and German-occupied Western Europe, including 135,000 tons on German territory proper. Amongst the heavy raids were thirty of between five hundred and a thousand tons; sixteen of between one thousand and fifteen hundred tons; nine of between fifteen hundred and two thousand tons; and three of over two thousand tons.

From Lübeck on, in the two years 1942-3, sixty per cent of the total bomb load was dropped on built-up areas.

From June 1943 on the U.S.A.F. carried out systematic aimed attacks in daylight against important industrial targets, chiefly in the engineering and aircraft industries. A subsidiary aim of these U.S. raids, which were costly, was to challenge Germany's fighter force, as they were usually escorted by long-range fighter planes which could fly as far as the Elbe. By a process of attrition it was hoped to gain command of the air.

Despite intense efforts and a constant strain on both material and personnel, R.A.F. Bomber Command was unable to carry out the double task laid down by the Casablanca Directive. Its air offensive did not destroy or even materially reduce Germany's productive capacity and it did not break the morale of Germany's civilian population. Measured against its objectives the Battle of the Ruhr was a failure, because, despite all Bomber Command could do, and despite heavy losses, production continued to rise steadily in the bombed areas. The concentrated bombing attacks against the towns in the interior certainly caused great material destruction, but on the whole they had little effect on production. The concentrated attack on Berlin was

hampered from the beginning by unfavourable weather for the attackers, and this greatly diminished the effect of the operations.

The U.S. daylight attacks into the interior of Germany (at first carried out without effective fighter protection) were very costly despite the heavy armament of the Flying Fortresses. However, though heavy, the losses in material and personnel could easily be replaced from the vast resources of the United States. In the second half of the year fourteen factories in various parts of Germany which were producing fighters for the Luftwaffe were attacked in this way and badly damaged.

Germany's air defences, well-organized and efficient though they were, were not strong enough to beat off the Allied air attacks, but they remained in being without any noticeable diminution of strength. The number of bombers shot down remained much the same, but the number of raids into the interior increased four-fold, which meant that Germany's fighter force was condemned to progressive inferiority, and in 1943 the number of fighter planes destroyed or seriously damaged in air battles rose to 10,660.

The 'Baby Blitz'

By the beginning of the fifth year of the war Germany was suffering increasingly from the terror raids which struck deep into her territory, and the Luftwaffe now made a last desperate attempt to hit back in kind and secure an alleviation of the bombing. For this reprisal operation, which has to go

into the history of air warfare under the name of 'Baby Blitz', 550 planes were brought together from all fronts; any plane which could be spared and was half-way suitable was pressed into service, including many fighter-bombers. This improvised air fleet now renewed the air attack on Britain after a pause of almost three years. From the end of January to the end of April 1944 twelve attacks were launched, and 275 tons of bombs were dropped on London and 1,700 tons on chosen objectives in the Southern Counties.

Excessive losses, amounting occasionally to almost fifty per cent, made it necessary to break off the action – at a time when an operational bombing force to harass Allied preparations for the invasion of Europe was urgently necessary. Casualties and damage were caused, but the net effect on the prosecution of the war was nil. It proved impossible to obtain a single photograph of the damage done in London; and daylight flights were no longer possible. Flying under cover of darkness the Luftwaffe adopted R.A.F. tactics. Target areas were marked by flares released by pathfinder planes, and the main bomb load consisted of incendiaries. Heavy mines and high-explosives were intended to spread the fires started and hamper the work of fire-fighting. Some of these night attacks caused anything between 150 and 600 fires, but thanks to the work of the well-organized National Fire Service, and the activities of local fire parties, they rarely had a chance to spread. The moral effect was perhaps greater than the actual damage, but neither one nor the other was of any material importance.

The 'Baby Blitz' was described by the British authorities as 'short and sharp'. Casualties in the Southern Counties

rose to 2,673 and it was noticeable that the nerves of the inhabitants were no longer so good as they had been during the real 'Blitz' of 1940-1.

In Germany 'Luftwaffe Command Centre', which had been formed in 1941, was now renamed 'Air Fleet Reich' and reorganized to cope with new tasks. About one-third of the Luftwaffe was now on the Eastern Front, and one-sixth in the Mediterranean. The remainder served the Western Front and home defence – the latter force consisted almost entirely of fighters, and in its battle with the Americans for the command of the air its losses rose rapidly: in January they were 1,115, in February 1,118, and in March 1,217. It was just possible to replace the lost planes, but it was no longer possible to replace the trained pilots; and by the spring of 1944 the battle for the command of Germany's skies was more or less decided: the resistance of the day fighter force had been effectively broken. And, as Mr. Churchill writes in Vol. V of his memoirs: 'That was the turning point of the war.'

The Anglo-American air forces bombing Germany now began to use the tactic of the 'double blow' more and more frequently: the first blow would fall in the afternoon, and the bombers engaged would fly back under cover of darkness, whilst the night bombers were flying in – to find their targets already marked for them by the fires started by the daylight raid.

The first daylight attack on Vienna took place in March 1944. The Allies were now able to extend their strategic bombing right round the clock; and with this, the aim Air Marshal Harris had worked for persistently since he first took

over his command at the beginning of 1942 was attained at last.

But at the end of March 1944 Bomber Command was reorganized to cope with the tasks of the coming invasion of Europe. For the time being it was no longer an independent force; despite the strong opposition of the British Bomber Chief, the R.A.F. was now under the orders of General Eisenhower, who was in supreme command of invasion operations. With this decision the main offensive against Germany's towns, which had lasted just over nine months, from 10th June, 1943, to 25th March, 1944, was temporarily over. Germany's towns were given a breathing space, and in the two months preceding and the two months following the invasion no large-scale attacks were flown.

In this period British Bomber Command was allowed to retain only fifteen per cent of its effectives for independent operations, and this much reduced force was used primarily for continuing the raids on Germany's aircraft industry, and the raids were extended to Eastern Germany (Königsberg, Marienburg, Gdynia and Posen). At the end of June 1944 U.S. bombers landed on Russian airfields in Poltava and Mitgorod after having bombed synthetic oil plants in the Kottbus area. From these airfields they took off the next day to attack the oil fields in Galicia, flying on afterwards to Italy. From Italy they then flew back to their own bases in Britain, bombing railway targets in Southern France on the way; a total flight of 7,500 miles and the inauguration of a tactic which had never been tried before.

The Second Big Offensive against Urban Germany

Hardly had the Chief of British Bomber Command been relieved of his obligations to the invasion armies by their victory in Normandy than he turned the full weight of his now even more powerful day and night squadrons to his old objectives: Germany's devastated and gutted towns. And to make their task easier, the Allies now had almost complete command of the air. Already hard-hit towns were hammered with new rains of bombs, and as there was little more that could burn, this phase of the attack was carried out chiefly with high-explosive bombs, which had in the meantime increased in size and effectiveness, in order to drive the inhabitants out of their cellars 'into the open'.

In August 1944 the Allied air offensive in the West could claim for the first time that it stood in some sort of tangible relationship to military operations in the field. For example, a U.S. drive over Trier (Trevès) to Mannheim-Darmstadt was thought to be imminent because of the persistent air attacks on towns in South-West Germany lying along the path of the supposed advance. Later on, during the course of the drive towards Aachen (Aix-la-Chapelle), further towns in the line of operations were attacked, for example Jülich and Düren. Ninety-seven per cent of Jülich was destroyed, whilst Düren was practically wiped out; 5,000 people being killed and only six houses left standing.

At the beginning of this second great air offensive Bomber Command was given new directives. At the end of September Combined Target Committee drew up a list of tasks in the following order of importance:

1. Continuation of area bombing with intensified day and night attacks;
2. A systematic attack against Germany's oil resources with pin-pointed targets;
3. The destruction of Western Germany's traffic and transport system;
4. Secondary air attacks against various important industrial targets.

The R.A.F. now began to use part of its bomber force for daylight operations, and by this time it was able to do so almost without risk because the German skies had been swept almost clear of enemy fighters, and although the German radar network still gave prompt warning of almost all incursions, there were so many that the ground defences were even less able to cope with them than before.

Whilst continuing its terrorist attacks on built-up areas, the R.A.F. now began to attack chosen industrial targets as well. During the last eighteen months of the war important technical developments, including radar and radio devices and pathfinder target marking, greatly improved bombing accuracy even under cover of darkness, though indiscriminate area bombing still remained the favourite R.A.F. weapon. The Americans now also began to fly by night, but their attacks were primarily directed against industrial targets. During October 1944, 42,246 tons of bombs were dropped on Germany's towns as against 14,312 tons on industrial objectives.

In the last few months of the war British and U.S. bombing policies which had at first taken quite different paths both in theory and practice, hardly differed any more. The opinion

sometimes met with that the R.A.F. had the job of destroying Germany's towns, whilst the U.S.A.F. cleared the way for the advancing armies is an oversimplification. By long and painful experience Germany's towns had come to regard the R.A.F. raids under cover of darkness as worse than the U.S. daylight attacks, but this rapidly changed in the closing stages.

For a while after the Casablanca Directive in 1943 the division of labour between British Bomber Command and the U.S.A.F. remained more or less in being: the Americans attacked industrial targets by day, the R.A.F. destroyed towns and residential areas by area bombing at night. But towards the end of the war the views of the Allies concerning the character, tactics and objectives of the bombing offensive seemed to be in complete agreement. According to official U.S. figures, during the last four months of the war about 80,000 people were killed and 13,000 dwelling houses destroyed by night attacks, or by attacks conducted through thick cloud cover, by the U.S.A.F.

Oil Transport and Armaments

In July 1944 each of the twelve big German synthetic-oil plants was heavily attacked on at least one occasion. In consequence the normal production of 316,000 tons a month sank to 107,000 tons, and continued to sink until in September it was only 17,000 tons. The production of high-octane fuel, 'the heart's blood of the Luftwaffe', sank from 175,000 tons in April to 30,000 tons in July and 5,000 tons in September.

From May 1944 on the demand was greater than the supply, and within the space of six months all reserve stores had been exhausted. The Luftwaffe could not get off the ground because it lacked fuel, and at the same time the mechanized units of the Wehrmacht became less and less mobile. Air attacks were also flown against factories producing 'Buna', or artificial rubber, and factories producing artificial nitrogen (needed both for armaments and agricultural purposes). The main weight of the air offensive against Germany's oil supplies was borne by the U.S.A.F. (seventy-five per cent), but the R.A.F. also took part.

The second prong of the air offensive against Germany's industrial war capacity was directed against the traffic system. Up to September 1944 the attacks caused no very great difficulties, and it was possible to keep rail and road traffic going with reasonable efficiency, but by the end of October the weekly number of wagons available fell from 900,000 to 700,000; and by the end of the year it was down to 214,000. The damage done to Germany's inland water transport system also began to make itself felt, particularly in the supply of coal from the Ruhr mines to the various points of industrial production. At the end of September the very important Dortmund-Ems Canal was heavily attacked by special five-ton bombs and put out of action along fifteen miles of its length.

A secondary air attack began in August 1944 against Germany's tank factories, and by the autumn of 1944 production had fallen from 1,616 to 1,552. However, the effect was not lasting, and by the end of the year it had risen higher than ever to 1,854. Further important targets were the big

motor-engineering works supplying the Wehrmacht, such as Opel in Brandenburg, Ford in Cologne and Daimler-Benz in South Germany.

From November 1944 on heavy precision-bombing attacks were also made on shipyards, and in particular on those yards which were producing the new electric U-boats. However, by the end of the war about 120 of these new submarines had been launched. Subsidiary targets bombed from time to time were power stations, optical works, machine-tool factories and army clothing manufacturies.

Review of 1944

On the Allied side the British continued their nightly area bombing, which they had started in the spring of 1942. By the end of 1944 four-fifths of Germany's towns of 100,000 inhabitants and over had been destroyed. Between then and the end of the war the turn of the rest came as the bombing extended farther and farther eastward. In all seventy big towns were devastated, twenty-three of them were sixty per cent razed, and the remainder 'only' fifty per cent.

The Americans continued to fly daylight attacks against key industrial targets, whilst at the same time battling with the Luftwaffe for command of the air. The rapid increase in the number of raids carried out by long-range heavy bombers meant that the air offensive was increasing in weight and that it was even more devastating than before. From February 1944 on U.S. long-range fighters were able to escort the bombers to the most distant targets in Germany. At the same

time the average number of bombers engaged in a large-scale attack increased from four hundred to nine hundred, whilst the biggest number engaged in any one raid increased from 550 to 1,200. In all 680,000 tons of bombs were dropped on Germany in the course of the year.

In 1944 the average strength of British Bomber Command operating against Germany rose to 1,120 heavy and one hundred fast light bombers.

As far as Germany was concerned the fighting capacity of the Luftwaffe sank in inverse proportion; not so much because of a shortage of technical replacements, as because of excessive losses in trained personnel which could no longer be made good, and the increasing shortage of high-octane fuel. The average personnel losses per month in 1944 amounted to 1,472 officers and men.

The tactical deployment difficulties of the Luftwaffe also steadily increased. Out of approximately 700 fighters available for use against the American daylight offensive at first, sometimes only thirty would actually make contact. The anti-aircraft defences were steadily running down too; obsolescent and worn-out guns whose range was no longer sufficient to threaten planes flying at the increased ceiling of 25,000 to almost 30,000 feet, were not replaced, and by the beginning of September 1944 there were only 424 heavy A.A. guns of sufficient range in operation. According to official figures, light A.A. batteries had to fire an average of 4,940 shells, costing 7.50 marks apiece, and the heavy A.A. 8.8 cm batteries had to fire 3,343 shells costing 80 marks apiece (that is to say A.A. shells costing a total of 267,440 marks) in order to bring down one heavy bomber.

The 'Baby Blitz' launched against Britain at the beginning of the year as a last desperate effort to relieve the pressure of the non-stop offensive against Germany's towns, achieved nothing. The weight of bombs dropped was too small, and amounted to perhaps a thirtieth part of the tonnage dropped on Germany's towns in 1944. The approximately five months respite which Germany was granted as a result of the preparations for and the carrying out of the invasion were used in a systematic attempt to repair the worst of the bomb damage.

1945 and the End

The last big operational campaign of the Luftwaffe took place in support of the Ardennes offensive at the end of 1944. Three hundred and twenty, or forty-three per cent of the 750 planes in operation against the overwhelmingly superior strength of the Allied air arm, were shot down, and by the beginning of 1945 the Luftwaffe was practically finished as a fighting force.

Masses of fugitives from the East, fleeing before the Russian advance, now met masses of fugitives fleeing from the West before the Allies advance, and they often snarled up with Wehrmacht columns on the roads and became the targets of enemy air attack as Germany's territory shrank rapidly both East and West.

On the Rhine the forces of the Western Allies were preparing to administer the *coup de grâce*, methodically and systematically concentrating their now overwhelming strength both on land and in the air. After eighteen large-scale attacks

on towns in the path of the advancing armies, the Rhine was crossed at Wesel with the loss of only thirty-six men.

To the east of the Rhine air warfare now reached a pitch of intensity out of all proportion to our already hopeless situation. One alert followed on the heels of the other, and the bombers hammered away ceaselessly at anything on the ground that seemed to be still standing, irrespective of whether it was any sort of a target or not. In its final stages the air offensive seemed almost to take charge on its own and to develop apocalyptic forms. The final attack burst with almost elemental violence over an already devastated country and its harassed people. 'The path of destruction was like a via triumphalis, paved and bordered by the ruins of innumerable towns and villages,' wrote F. G. Jünger. The general impression created by the insensate bombing was as though the sorcerer's apprentice had been trying his hand and was now unable to stop. It was like an elemental irruption which could no longer be controlled and localized, but which emptied itself over the country like a natural catastrophe.

Quite obviously all limits were brushed to one side here, limits which should have continued to exist even in political and military operations. The men who sent out the bombers now seemed to feel that no holds of any kind were barred, that any form of destruction was justified, and to any extent. The whole built-up and inhabited area of Germany was now dragged into the maelstrom of destruction. The smallest village became a military objective. Scores of both economically and politically insignificant small towns were destroyed without any military necessity whatsoever – unless it was perhaps their possession of a railway station.

It was a British war historian, Professor C. Falls who declared after the war: 'Perhaps the most effective comment that can be made in brief space upon the whole policy of bombing is that those who controlled it were not sufficiently controlled themselves.'

The time when one could still count the large-scale attacks, the time when every day cost us the destruction of a further town, was over. The destruction was now an uninterrupted process, and heavy attack followed heavy attack. There was no time to take one terrible report to heart before it was already pushed into the background by the next.

And this inferno of death and destruction seemed to leave Germany's leaders unmoved. The total warfare they had so boastfully proclaimed was now on their own doorstep. And it was more terrible than even they had ever imagined. The German people were left to reap the harvest of hatred their leaders had systematically sown. It was the ordinary men and women and their children who had to pay the bill. And those men who had always sworn that their every action was guided by their love of Germany were revealed in all their naked ugly egoism. The war was lost, long lost, and they knew it. They could have ended it with a word, and spared the German people unnecessary suffering. But instead they preferred to drag down as many others as possible into their own now inevitable destruction.

It was in this period that the most terrible fire attacks of the whole bombing war took place.

On 14th February, 1945, catastrophe overwhelmed Dresden in a form so terrible that the details in all their horror will never be fully known now. And in the night of 17th-18th

March the lovely old baroque town of Würzburg was destroyed by a highly-concentrated incendiary attack 'with everything and everybody in it'. After the attack the memorial address—so to speak at the graveside—was delivered by Bishop Matthias Ehrenfried, whose seat it was, and whose heart was heavy at the thought of 'the beauty and magnificence now destroyed', and still more of 'the many, many people who have lost their lives'.

On 22nd March, another ancient bishopric was destroyed by a heavy and deliberately devastating attack in daylight. The splendid medieval town of Hildesheim with its four magnificent churches and its great store of art treasures was gutted.

In March alone the R.A.F. carried out twenty-four daylight and nine night attacks against various towns.

In the night of 3rd-4th April a heavy double attack almost completely destroyed the thousand-year-old Thuringian town of Nordhausen.

On 14th April, Potsdam with its historical buildings and its magnificent royal palace collapsed into ruins.

As the fronts closed in a new terror was added to all the rest; fast two-engined fighter-bombers began to attack small towns, villages and even individual farm houses. The work in the fields, and the roads from village to village, were no longer safe from sudden attack. This fighter-bomber offensive quickly developed into a cruel and brutal sport, and anything that moved—farm carts, human beings, anything—was attacked.

On 6th April Bomber Command was instructed henceforth to attack towns only in direct support of the advancing armies. Air Chief Marshal Harris writes: 'When the Allies

had crossed the Rhine and struck deep into Germany we were ordered to stop all strategic bombing, since the end was obviously at hand, but we continued to attack by day and night such centres of organized resistance, together with road and railway communications, as still confronted the advancing armies.'

Ancient, small and medium-sized towns were reduced to dust and ashes merely in order 'to intensify the chaos behind the lines'. As a general rule there was such a great time lag between the destruction and the occupation that it was rarely possible to accept the explanation of military necessity for destruction that appears wanton. For example, Jülich was destroyed on 16th November, 1944, but not occupied until 23rd February, 1945; Freiburg destroyed 27th November, 1944, occupied the beginning of April 1945; Heilbronn destroyed 4th December, 1944, not occupied until the beginning of April 1945; Dresden destroyed 14th February, 1945, not occupied until the following April; Ulm destroyed 17th December, 1944, not occupied until 24th April, 1945; Würzburg destroyed 16th March, not occupied until 1st April; Bayreuth destroyed between 5th and 10th March and not occupied until 18th April.

On 20th April, Hitler's last birthday, one of the heaviest thousand-bomber attacks was launched on Berlin. On 25th April, 318 Lancaster four-engined heavy bombers, many of them carrying specially constructed ten-ton bombs, destroyed Hitler's official residence, sometimes used as the seat of Government, at Obersalzberg near Berchtesgaden. On the same day the U.S.A.F. launched its last daylight attack on the Skoda Works in Bohemia.

On 26th April, renewed instructions were issued to Bomber Command to stop strategic bombing, but the minor bombing offensive with tactical bomber forces, and in particular fighter-bombers, went on undiminished to the day Germany capitulated.

During the night of 2nd-3rd May the last night attack by concentrated bomber forces of the R.A.F. was launched against railway targets in Central Germany.

On 3rd May, 7,000 political prisoners from twenty-four countries lost their lives when two transport vessels, the *Cap Arcona* and the *Thielbeck* were sunk in Lübeck Bight as the result of bombing attacks by the R.A.F.

The last bombs of the war fell on Heligoland, thus completing the vicious circle exactly where the first example of total bombing warfare in history had started five and a half years previously in September 1939.

From January to the end of April 1945, a total of 404 strategic bombing attacks was carried out against military and civilian objectives in Germany, 217 of them by day and 137 by night. A total of 340,000 tons of bombs was dropped. In this same period a total of 148,000 tons of bombs was dropped in direct support of the armies in the field.

The Casualties of Air Warfare

It is rather depressing that owing to the difficult post-war circumstances we still have no exact figures concerning the number of civilians killed as the result of the bombings. We have fairly accurate figures concerning the losses of the Wehrmacht in both world wars, and a good deal of careful investigation has been done to make them as reliable as possible. But we had to wait a long time before we could get any even approximately accurate estimates concerning civilian casualties during the war. Even now they are often very summary and sometimes none too reliable.

There are a number of reasons for this unfortunate situation. First of all the necessary documentary basis is often missing, having been lost or destroyed in the confusion of Germany's collapse, or by the bombing itself, or having been confiscated by the victors and taken out of the country. In addition, there is another factor which constantly proved a great source of irritation during the war itself, namely that the Luftwaffe and Civil administrations often worked against each other or overlapped, whilst the local authorities, whose job it should have been, were side-tracked, with the result that often no one quite knew who was actually responsible for keeping count of the casualties. And finally, the respon-

sible authorities omitted to provide the civilian population with identity discs. It was this incredible neglect which is responsible for the fact that the number of anonymous victims is so high.

During the first years of the war there were no centralized attempts to keep a count of the casualties. The figures published were arrived at without official authority and they were often slanted according to the purpose of whoever was responsible for their publication. The first estimates from occupation sources varied considerably. The total number of dead was estimated at being 300,000 and 600,000, leaving a very wide gap indeed; and the number of seriously injured was placed between 600,000 and 800,000. But the procedure by which such figures were arrived at has remained unknown.

These Allied estimates are in dispute. For example, the Allied statesmen gathered together at the Yalta Conference greatly over-estimated the effects of the bombing when they sought to explain to their own peoples that the forcible evacuation of the German population from all areas to the east of the Oder-Neisse line would merely fill the gap caused by the very high losses of the civilian population in the rest of Germany – though the evacuation involved the enforced migration of millions of people.

Even those figures which were arrived at later with our assistance remained unreliable for a long period. The first attempts at arriving at a total of Germany's losses during the war put the number of civilians killed during the bombing at about 450,000, but it was not long before it became clear that this was an underestimate.

The main trouble in arriving at a reliable total is that

local and regional figures are incomplete, and this was the case even during the course of the war itself. This is understandable enough, because the full extent of the damage and casualties caused by a heavy raid became visible only gradually. Just as everybody's personal bomb was always bigger than the other fellow's, so under the shock of the attack each town tended to exaggerate the first reports, and these had a habit of creating a deeper impression than subsequent and more objective information.

A great deal of the confusion was also caused by official attempts to conceal the extent of the damage and casualties, with the inevitable result that in the absence of reliable official figures rumour took over and spread often grossly exaggerated reports. This happened in particular after the great fire raids on Hamburg, Cassel, Wuppertal, Heilbronn, Darmstadt and Würzburg. For example, after the heavy attacks on Hamburg in 1943 persistent rumours were current in Germany which put the total dead at 100,000. It was only six years after the end of the war that it could be reduced credibly to a figure of approximately 40,000.

Fairly reliable post-war figures put the fatal casualties in Munich as a result of the bombing at 6,750 but the figure still generally quoted is the one originally advanced, namely 25,000.

Today, the total loss of life in Heilbronn as a result of seventeen air attacks is known to have been approximately 7,500, but the figure you can still hear quoted for the heavy incendiary attack on 4th February 1944 is 16,000.

The figure commonly quoted for the number of people who lost their lives in Cassel in the night of 22nd-23rd

October, 1943, when the centre of the town was turned into one vast crematorium, is 40,000, but the official figure, published after careful inquiries later, was 9,200. Particular circumstances made it possible to make an accurate analysis of the casualties here, and it is known that out of every hundred dead, fifteen were killed by high-explosives and fifteen by fire, whilst seventy were suffocated. This proportion is fairly typical for the casualties in a heavy incendiary attack.

Casualty figures are still doubtful for many towns. Dresden, which suffered very heavily, is the town about which least is known with any certainty concerning the number of victims. Estimates vary between 30,000 and 300,000. For a long time the figure of 225,000 was quoted internationally and this was the figure mentioned by R. T. Paget, defending counsel in the Mannstein process. However, objective accounts based on expert evidence and after a careful consideration of all the circumstances, give a figure of 60,000 dead in one single night of incendiary attack, a figure heavy enough in all conscience. On the other hand, there are credible accounts which place the total number of dead at 250,000. In short, we just don't know, and we never shall know now. The Dresden terror defies all estimates.

But even when conditions were not so confused as in Dresden, which was packed with fugitives, many stricken towns are still unable to provide reliable figures of their losses. The sort of difficulties with which the investigations had to cope can be seen from the following statement of one town council:

'In the past few years we have not made much further progress with our inquiries. The number of 8,500 certified

dead has not changed materially, though according to police records 13,000 dead were buried. At this late stage it must be regarded as unlikely that we shall ever discover just who those people were whose identities were not recorded at the time. Very many of the bodies were charred or otherwise mutilated beyond recognition. There was nothing by which bodies could be identified. In some of the shelters subsequently opened there was nothing but ashes, though they were known to have been occupied. Carefully prepared lists which were intended to serve as the basis for subsequent investigations were confiscated by the occupation authorities. We have done our best to trace back the actual death registrations in order to supplement our own figures, but we discovered that many thousands were not listed according to their place of origin, and therefore only those referring to the town itself could be given. It must also be taken into consideration that towards the end of the war two-thirds of the town's population were evacuated.'

Another town council, asked for a breakdown of its figures into age and sex, replied: 'Only the officially registered dead could be statistically noted according to age and sex. It was quite impossible with those listed as missing, presumed dead, and with the many hundreds of unidentified bodies. The final total of dead will probably never be known, but one thing is already certain: the number of officially registered dead is far below the actual number.'

From these statements it is quite clear that we must distinguish between officially registered casualties and other casualties; between figures which are reliable as far as they go, but are nevertheless very incomplete, and little more than estimates.

TABLE NO. 6

Towns with the Highest Casualties

(not including Dresden, the Rhineland and the Ruhr)

Hamburg	55,000	Cassel	13,000
Berlin	49,000	Darmstadt	12,300
Cologne	20,000	Heilbronn	7,500
Magdeburg	15,000	Würzburg	4,200

Table No. 7 shows the officially registered number of dead for thirty towns in the Rhine-Ruhr area where for various reasons it was easier to arrive at fairly reliable casualty figures; but even here it must always be remembered that the actual casualties were considerably higher.

The fact that despite the many heavy attacks made over the space of five years, and in particular during the Battle of the Ruhr, the casualties were relatively low is due in the first place to the efficiency of both the active and passive defence, and secondly to the gallant efforts of the local mine-trained population in the voluntary building of air-raid shelters, and to the high standard of civil-defence discipline.

In West Germany bomb-proof shelters offered protection to a million and a half people. In Central and East Germany such protection was almost non-existent.

The proportional differences between the number of male and female victims is due to the particular conditions in the town in question and often to the objective of the particular raids. During night raids, when there was indiscriminate area bombing of residential quarters, there were usually more female than male casualties, whilst during daylight raids on industrial targets there were more male casualties.

TABLE NO. 7

Officially listed Casualties in the Rhine-Ruhr District

Aachen	2,347	Mönchen-Gladbach	1,267
Bonn	1,569	Mühlheim	1,300
Bielefeld	1,349	Münster	1,595
Bottrop	719	Minden	465
Bochum	4,095	Neuss	837
Dortmund	6,000	Oberhausen	2,300
Düsseldorf	5,863	Rheydt	820
Essen	7,500	Remscheid	1,346
Gelsenkirchen	3,092	Siegen	565
Gladbeck	3,095	Solingen	1,700
Hagen	872	Wanne-Eickel	1,074
Hamm	1,235	Wattenscheid	293
Cologne	20,000	Witten	711
Krefeld	2,084	Wuppertal	7,000
Total			87,216

TABLE NO. 8

*Comparison of Male and Female Casualties**For every 100 male casualties there were:*

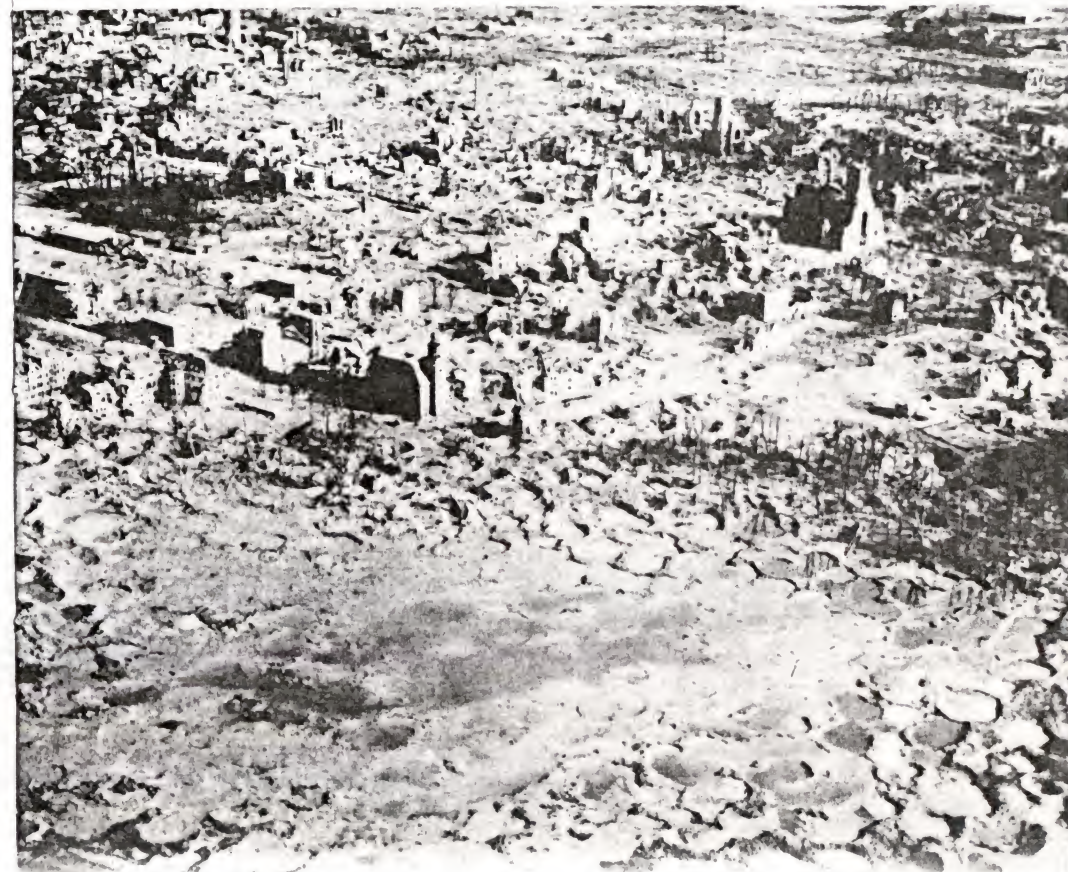
	female	casualties	in	Hamburg
160				Darmstadt
181	"	"	"	Cassel
136	"	"	"	Frankfort
104	"	"	"	Nuremberg
114	"	"	"	Augsburg
122	"	"	"	Stuttgärt
90	"	"	"	Munich
92	"	"	"	Schweinfurt
91	"	"	"	Bremen
82	"	"	"	Kiel
70	"	"	"	Cologne
99	"	"	"	Würzburg
86	"	"	"	



Life goes on amidst the devastation of Hamburg.

An illustration of bombing in support of ground forces is this view of Wesel, Germany, the point where American forces crossed the Rhine north of the Ruhr Valley during the invasion.

Official USAF Photo





A gesture of sadness from the roof of the Dresden Rathaus.

On the whole, however, and this is very marked, in all age groups the number of female casualties was greater than the number of male.

With regard to the number of children killed—and here we come to the bitterest part of the balance—local figures do not give sufficient information to allow us to draw general conclusions, but where reliable figures are available they are deplorably high.

In Hamburg, 7,000 fatal casualties, or nineteen per cent of the total number, were children and young people. In addition ten thousand children were orphaned by the loss of one parent or both. In Cassel, 1,881 out of the total of 9,200 dead, or twenty per cent, were children under sixteen. In Kiel, the percentage of children to the total number of dead was also twenty per cent. In Freiburg, in Breisgau, where sixty per cent of the 2,767 certified dead were women, 252 boys and 275 girls under sixteen were killed, or nineteen per cent.

In a conscientious but incomplete general summary the number of children killed was put at 18.7 per cent of the whole. As in normal circumstances the number of school-children represents about fourteen per cent of the total population, this means that five per cent of the total number of casualties must have been babies and children under school age.

The percentage of old people amongst the fatal casualties was also very high indeed, and in certain towns it was even as high as twenty-two per cent.

Figures given in a general summary issued by the Statistical Reichs Office must be accepted as a general guide until

further notice. They were published in *Wirtschaft und Statistik, Vol. 10-1956* within the framework of a population review for the former German Reich.

TABLE NO. 9
*Civilian Dead and Wounded in what was
Reich's Territory on:*

	31.12.37		31.12.42	
	(including	excluding	(including	excluding
	fugitives)	fugitives)	fugitives)	fugitives)
Dead	410,000	537,000	563,000	570,000
Wounded	637,000	834,000	677,000	885,000

These figures do not include non-combatant groups such as police, Civil Defence workers, foreign-born workers and prisoners of war.

Such figures convey very little. As there are no standards of comparison one can regard them as high or low according to the point of view. They begin to take on shape and depth only when brought into relationship with comparable happenings.

Some people are inclined to regard such losses as low on the whole by comparison with the number of people directly affected by air warfare, and in particular by comparison with the vast figure of twenty-two million people who are said to have lost their lives during the Second World War. And again, they may appear relatively low compared, for example, with the number of people who lost their lives directly or indirectly as a result of the hunger blockade of the First World War. According to a memorandum of the Reich's

Ministry of Health between the wars this figure was approximately 800,000, including 150,000 people who died from the combined effects of under-nourishment and an influenza epidemic.

Still others compare Germany's civilian casualties in the air war – despite vastly different circumstances – with the higher percentage of the total population killed during the Thirty Years War. As a result of this cruel war only about one quarter of the original population remained alive at the end of it, whereas between 1936 and 1946 the population of Europe increased – despite war losses – by eleven millions.

But whatever attitude one may adopt towards the problem and however right those people may be who reject all comparisons as fruitless, because blood and tears cannot be represented in cold statistics, the fact remains that civilian losses in Germany – one civilian for every four combatants – were very high, even unexampled in modern European history. In some towns the casualties amongst those who stayed at home were greater than amongst the men who went to the front.

Hamburg, for example, lost twice as many civilian dead during the bombings as the total losses of the German Army during the whole of the Franco-Prussian War of 1870-71. Incidentally, a proclamation issued by King Wilhelm I, afterwards Emperor of Germany, on August 11th, 1870, at the beginning of the war and addressed to the people of France deserves to be recalled if only to show how greatly the ideals of humanitarianism in war has declined since then. The appropriate passage reads: 'I am waging war against the soldiers of France, and not against her civilians. The

latter will therefore continue to enjoy the safety of their persons and their property, in so far as they do not deprive themselves of this right by taking hostile action against my troops.'

But to return to very different days, we feel that it will be approximately correct to put Germany's civilian losses by bombing during the Second World War at roughly 600,000 and the number of seriously injured who nevertheless survived at about 800,000.

British sources, for example Charles Webster in *The Strategic Air Offensive against Germany*, and J. Butler in his *History of the Second World War*, very greatly underestimated German civilian casualties, putting them at 180,000 only. The great discrepancy has given rise to a good deal of discussion, and the German Federal Government in Bonn instructed its Statistical Office (Statistisches Bundesamt) to prepare an official report. The results of the investigation were published this year in *Wirtschaft und Statistik*, Vol. III. 1962, pp. 139-42, and the total number of civilian casualties is given as 593,000 - an extraordinarily close approximation to my own figure, independently arrived at after many years of inquiries.

The Italian authorities put the number of fatal civilian casualties in Italy as a result of bombing at 64,350. Twenty-three per cent of whom were children.

The corresponding figure issued by the French authorities is 58,000.

The figure for British civilian casualties is given as around 60,000, half of them in Greater London.

Let no one interpret these comparisons as an attempt to draw up a balance of evil. Any such attempt would be point-

less, and certainly completely mistaken at a time when all the peoples of Europe are beginning to regard bombing warfare as a common misfortune for all. The sufferings of ordinary people will have had some point only if the proper conclusions are drawn for them for the benefit of future generations.

This painful review of a period in which the lives and happiness of helpless people were cruelly ignored can hardly close more appropriately than by quoting the words engraved on the monument erected to the memory of the 55,000 victims who lost their lives in Hamburg as a result of air bombardment:

'May the generations to come be spared such a slaughter of the innocents. May this common grave be an urgent warning to all to exercise charity towards their fellow men.'

Bombing and War Production

WHAT EFFECT did the long years of persistent air bombing have on Germany's war production? This important question was investigated immediately after Germany's capitulation by special commissions set up by the victorious powers to study the matter on the spot. The results of their investigations have been set out in numerous reports. Later on, too, the reasons for the astonishing powers of resistance shown by Germany's industry were the subject of many detailed investigations. Thanks to all these expert inquiries we can now give a fairly clear answer to the all-important question which arises out of strategic bombing operations: did Germany's war production suffer decisively as a result?

The following graphs taken from Kaldor's *Review of Economic Studies* give a much better picture of a complicated situation than long-winded reports and tiring statistics.

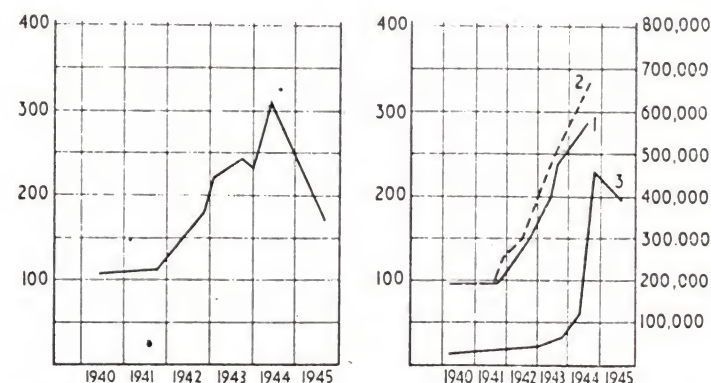
The meaning of these graphs is so clear that they really make any further figures and details, or even discussion, unnecessary. Let us therefore enumerate once against the most important causes of a phenomenon which was profoundly disappointing for those who waged the bombing war. How does it come about that despite all their tremendous efforts Germany's war production reached its highest level in the

TABLE NO. 10

The Development of Germany's Arms Production during the Second World War

Germany's arms production from
1940-5 (USSBI)

Production Tons



The numbered lines in the right-hand graph represent (1) actual annual production (1940 = 100); (2) estimated production if no area bombing had taken place; (3) total weight of bombs dropped on targets of all kinds.

summer of 1944 when the main air attack had already done its worst?

Perhaps the most convincing explanation of this astonishing phenomenon is that Germany's towns suffered the main weight of the bombing and thus acted, so to speak, as a protective shield for her war industry. We may take it for granted that none of the attackers seriously thought that in destroying the historic centres of Germany's ancient towns

he was materially damaging her war industry, because, of course, they were well aware that Germany's big, modern industrial plant was situated elsewhere. Germany's war production was seriously affected for the first time by the concentrated and very costly raids carried out by the Americans against key industrial points, and in particular against her large-scale synthetic oil plant, and against the West German railway and traffic system. But by this time most of Germany's towns had quite unnecessarily been reduced to dust and ashes.

There were those in Great Britain and the United States who thought that the explanation for the astonishing powers of resistance shown by German industry lay exclusively, or at least primarily, in the Nazi police system. But this was a gross over-simplification. No thinking man would deny the importance of a totalitarian régime for the maintenance of a nation's war economy, but, in fact, the measures taken to step up and maintain war production in Germany were very much the same as those taken in the democratic countries of the West: namely, the modernization of industrial equipment, the development of rationalized production methods, technical training, propaganda and, in particular, production bonuses. But above all it was due to the incomparable labour discipline and self-sacrifice of Germany's working people, both men and women – especially in the districts most heavily affected by the bombing. Again and again these men and women made good production losses caused as a result of bomb damage by the simple expedient of working more overtime.

It is quite true that whilst the bombing lasted more and

more industrial targets were hit, sometimes if only by accident, but the actual production losses caused were much lower than the enemy supposed. Those raids which were carried out in daylight, when accurate bombing was possible, certainly did a great deal of damage. But when the smoke had rolled away and the dust had settled the main plant was usually more or less intact. Buildings had been destroyed, but if need be the machines could still work without a roof over them. And the fact is that up to the late summer of 1944, German industry won the race between bomb damage and industrial production. It was at this point – as the German Armaments Minister Speer told the International Military Tribunal in Nuremberg – that productively, technically and economically the war was lost, and from now on industrial production was no longer able to fill the gaps.

The high quality of Germany's industrial leadership during the war was undoubtedly an important contributory factor in the success of German industry's survival. Its policy and its methods were very far from dictatorial. How jubilant were the leaders of British Bomber Command when their first large-scale air attack on 1st August, 1942, heavily damaged the Central Administration of German Industrial Concerns! They congratulated themselves on having beheaded Germany's war industry! But in fact the loss of 'a few desks and telephones' released Germany's industry from the harassing bonds of bureaucratic over-organization, and allowed it to get on with the job without interference. In many cases it was this sort of thing that cleared the way and led to important increases in industrial production.

The desperate measure finally adopted in order to cope

with a hopeless situation and maintain industrial production, namely the appointment of 'armament commissars', actually spelt the end of efficient industrial management and the end of Germany's war economy altogether because it meant the reintroduction of bureaucratic control.

Prior to this a good deal was achieved by decentralization, camouflage and underground factories, but it has been greatly exaggerated. Industry in all countries has always tended to avoid militarily dangerous sites and neighbourhoods, and when the first two years of the war offered German industry an opportunity of shifting important branches of industrial production to the south-east, into what was optimistically called 'the Reich's air-raid shelter', it was used to the full.

The erection of dummy plant intended to deceive the bombers and make them waste their bomb loads can be said to have affected Germany's production curves only negatively, but here and there it was highly successful for a while. For example, during the Battle of the Ruhr the leaders of British Bomber Command thought that the R.A.F. had put one of Krupps' most important factories out of action for months, and it was not until the end of 1943 that they discovered that their bombers had unloaded seventy-five per cent of their bomb loads on a dummy plant erected to the south of Essen. The costly and large-scale dummy installations in Ploesti, the Roumanian oil centre, successfully deceived the Russians for quite a long time, with the result that raid after raid did no serious damage at all. However, with the steady improvement of air reconnaissance technique, supported by the work of secret agents, this sort of trick became less and less effective. For example, later on the

thirteen big dummy plants erected to the north of Berlin did not deceive the bombers for long.

Underground installations were built to house some of the most important industrial key points, and they moved below in the first half of 1944. According to U.S. investigations, towards the end of the war there were 140 such underground factories operating. Almost all V weapons and half the production of aero-engines was underground. Numerous important stores were also kept in underground dumps. However, these underground installations were responsible for less than one per cent of Germany's total industrial production, and in the long run it would have been possible to get at them with specially constructed heavier high-explosive bombs. After the war all these underground factories were dismantled and blown up.

The insensate folly of the systematic bombing and destruction of Germany's towns can clearly be seen from the vast process of dismantling which took place after the war in order to supplement and complete the work of destruction the bombers had been unable to perform. In West Germany alone eighty-two steel works and 225 engineering works, and many, many other factories, were demolished or dismantled.

The U.S. investigation commission issued the figures on page 172 for the loss of industrial production as the result of strategic bombing.

The publication of these figures caused a good deal of astonishment, and some doubt was expressed as to their accuracy, but since then they have been confirmed by the results of a thorough study carried out by the German Institute for Economic Research: *German Industry in*

TABLE NO. 11

German Industrial Losses from Air Action

<i>Industry</i>	<i>Decline in Productive Capacity (in percentages)</i>
Mining (Ruhr district)	3
Engineering	10
Electrical power	10-15
Chemicals (basic materials)	15
Motor engineering	20-25
Steel	25-30
Shipbuilding	35

Wartime, 1935-1945 (Verlag Duncker & Humblot, Berlin-Dahlem). Thanks to its expert knowledge, thoroughness and reliability this German study with its indisputable facts is of great value to students of air warfare and war economy.

The lessons of bombing warfare, and in particular its failure against Germany's industry, are of fundamental military and political importance, and they should always be borne in mind in any discussion of the objectives of future air war, particularly by statesmen drawing up plans for the best strategic use of air power.

CHAPTER ELEVEN

At Least there was no Gas War

HARDLY HAD 'Gas' been used in April 1915 at Ypres, than vehement discussions began as to the place of this revolutionary new aero-chemical weapon in a future strategic air war. The imagination even summoned up grim pictures of the end of the world in consequence, and, of course, the bombing enthusiasts immediately took the new weapon to their hearts and worked out its every conceivable use. It naturally wasn't long before their preliminary enthusiasm was somewhat dampened because, in accordance with the invariably military law of compensation, the chemical industry which had produced the poison in the first place now produced the antidote. Another great weakness which soon became clear was the excessive dependence of the new weapon on the weather. This and other considerations effectively limited the use of gas during the First World War, but did not dispose of it as a theoretical possibility for the next war.

Between the wars, and after years of often vehement discussion, Germany's military and chemical experts realized, in all probability before the experts in other European countries, that gas warfare, and in particular gas air warfare, did not offer sufficient advantages to place it very

high in the list of war weapons. The British authorities took a different attitude, and in the late thirties the whole population was provided with gas masks – an undertaking which was so costly that it could be carried out only at the expense of other defensive measures, for example, anti-aircraft batteries and air-raid shelters.

Spaight deals with the point in his book *Bombing Vindicated* (pp. 58–59): ‘There was a general obsession with the gas menace in the years 1937–9. . . . We had warnings from many sources. . . . It is evident in retrospect that the Government of the time took this particular menace far more seriously than any other. The precautions taken to meet it were much more thorough and elaborate than those which were considered necessary for active defence. The provision of anti-aircraft guns and searchlights left, in comparison, much to be desired. . . . Some 200,000 volunteers had been trained in anti-gas measures, all the policemen in the country had been given instruction in this subject, about 10,000 doctors and 10,000 nurses had passed through a special course on the treatment of gas cases, and twenty million gas masks had been produced in the government factory taken over in July 1936 (the number of gas masks increased to fifty million by March 1939). “I believe,” said Lord Swinton, with evident satisfaction, “that we are the only country that has devised a system of mass production of gas masks.”’

France took similar anti-gas precautions, but on nothing like the same scale.

Germany adopted a middle course, and in the upshot this proved more reasonable. Her leaders decided against waging chemical warfare, and in particular aero-chemical warfare.

As far as her own armaments were concerned therefore her gas preparations were purely defensive, though they certainly included very thorough research in order not to be taken by surprise by the discovery of new types of gas. Of course, preparations were also made for powerful counter-attack should the enemy use chemical warfare. On the basis of rejecting aero-chemical warfare whilst being prepared for it there was a very thorough programme of chemical, medical and technical research and development in order to be ready for all eventualities, and its results led to the organization, equipment and training of Germany’s specialist chemical units known as ‘Nebeltruppe’, and to certain anti-gas measures to protect the civilian population.

According to a report published in the *Allgemeine Schweizer Militärzeitung*, the occupying powers discovered large stores of chemical weapons, including gas shells, and a dump of 130,000 gas bombs weighing 205 and 500 kilos and filled with a new gas believed to penetrate all known gas masks. Most of these dumps were underground.

A routine examination of captured Russian gas masks during the war revealed that the latest models were equipped with a filter against a certain type of gas, known to Germany’s chemical experts, but regarded as unsuitable for use. As a precautionary measure, however, a new filter was immediately developed and added to all German gas masks as a protection against this new type of gas, which was apparently in Soviet Russia’s chemical arsenal.

The fact that throughout the whole course of the war poison gas in all its forms was regarded as taboo by all the belligerents is one of the most interesting and unexplained

phenomena of the conflict. Writing in his book *Bombing Vindicated* (pp. 56, 60) in 1944, Spaight says: 'Whether Germany will use gas or not before the war ends can obviously not be known as yet. One thing, however, is certain: the confident expectation that she would begin the war with a series of gas attacks was falsified by the event. Then, if at all, was her opportunity. . . . The probability is that she never had the least intention of using it; which is not to say that she may not eventually use it, but only as a last desperate resort. . . . Mr George Sava has pointed out: "In the voluminous analyses of military problems published in Nazi Germany there was almost complete agreement on the uselessness of poison gas."'

Nevertheless, the prospect of gas warfare was a nightmare for all the belligerent governments throughout the Second World War. How justified the fear was that in their final desperation the Nazi leaders might throw all inhibitions to the winds and use gas after all can be seen from the fact that in February 1945 Goebbels angrily demanded that London should be attacked with gas bombs as a reprisal for the brutal destruction of Dresden. Fortunately the proposal was rejected.

And on our side we have to be thankful that Mr. Churchill at least spared us gas, though he could certainly have used it, and practically with impunity, towards the end of the war when the Luftwaffe was obviously too weak to retaliate. The consequences of the use of gas would have been terrible in the extreme, and the sufferings of the civilian population, already heavily burdened in those days of air terror, would have been increased almost beyond the imagination of man

to compass, particularly as Germany's civilians had not been prepared for such a possibility. The U.S. Commission of Investigation is quite right when it concludes its inquiries on the point by saying that although Germany's anti-gas personnel was well trained, and that Germany's civil defence organization had made preparations for dealing with gas casualties, the one great weakness was that, perhaps for fear that any such measures might cause panic, nothing had been done to enlighten and prepare the general public, so that the use of gas would probably have caused terrible chaos and suffering.

In post-war literature on the subject we often find it argued that the use of aero-chemical weapons and, in particular, effective nerve gases, would be more profitable for a victorious power than to destroy the country to be occupied by the use of high-explosives, incendiaries, or perhaps nuclear weapons. In his book, *Die deutschen Waffen und Geheimwaffen im zweiten Weltkrieg* (*Germany's Weapons and Secret Weapons in the Second World War*), R. Luser gives details concerning combatant gases which had previously been kept a close secret. And in Germany hopes had been fostered of a last minute salvation by means of new and allegedly decisive weapons. Such vague rumours were current both amongst the troops at the front and the civilian population at home. Even in the spring of 1945 there were headlines in the newspapers such as 'Victory now round the Corner!' Luser believes that such rumours did not refer to nuclear weapons, as has usually been taken for granted, but to new combatant gases whose deadly effects exceeded anything previously known.

The suggestion should not be ignored, and anti-gas measures will always have to reckon with the possibility of new, secret combatant gases. There will be other dangers to prepare for in addition to fall-out and radiation as the result of nuclear attack. No defensive plans will ever be able to leave the possibilities of chemical warfare entirely out of account.

We should like to feel – if only for the sake of our belief in humanity – that the decision to refrain from using gas in the Second World War was not entirely due to considerations of expediency; and that it was for moral reasons that the leaders on both sides hesitated to take the final step into degradation. The use of chemical weapons would, of course, have meant a deliberate violation of the hard-won provisions of the Hague Convention, which prohibit the use of combatant gases. At the same time the hopes of humanity for a better future would have received a blow that might have proved altogether fatal.

CHAPTER TWELVE

Human Beings in the Inferno
The Behaviour of the Civilian
Population

COMMENTING ON the differences of opinion which existed as to whether the systematic destruction of Germany's towns did or did not materially contribute to the victory of the Allies, Captain Liddel Hart confesses in a study entitled *The Objective in Warfare* that despite painstaking investigations it was extraordinarily difficult to obtain a clear picture, primarily because those taking part in the discussion were all passionately anxious to prove the correctness of their own theories, and their arguments were coloured by whether they were in favour of or opposed to indiscriminate area bombing. Even apart from such difficulties there were far too many imponderables complicating matters.

One of those 'imponderables' – that is to say, one of those factors whose effects cannot be clearly foreseen, or estimated only with difficulty – whose presence makes it so difficult to get a clear picture of the bombing war, is undoubtedly the unforeseeable reaction of the civilian population and its behaviour under fire – and in particular the behaviour of the inhabitants of those towns chosen by the enemy for what

has sometimes been described as 'morale bombing', i.e. bombing deliberately carried out in the hope of breaking civilian morale by terrorism.

The behaviour of Germany's civilians in the inferno of bombing warfare is certainly worthy of more than a cursory examination. The explanations and theories so far put forward come largely from foreign air-war historians, and generally speaking they are inadequate. It is time that German investigators joined the discussion. Their country was the main target of strategic bombing and they have, unfortunately, far more practical experience on which to draw than their foreign colleagues. In fact, without their co-operation it will hardly be possible to arrive at any altogether satisfactory conclusions. Those psychologists and sociologists interested in mass reactions have valuable material waiting for them here, and a wide and still almost virgin field for their historical and sociological investigations.

The spirit of self-sacrifice of which an ordinary human being is capable, either as an individual or as a member of a community, under conditions of extreme danger in war is a field of investigation which has so far not received sufficient attention; perhaps because the attempt to associate the facts with a human element extremely difficult to estimate, produces no very clear picture anyway, and there is a general tendency to see only what lies in the foreground, and not to investigate the hidden forces in the individual.

It is far from easy even to discover the facts themselves. And when this has been more or less satisfactorily done we find ourselves facing the all-important question: how did the men and women of those days cope with the horror and

hardship of ruthless air terror without breaking down under the strain? Only when this question has been satisfactorily answered will the bombing war be history.

In the meantime we have obtained rather more knowledge of the social and psychological factors which determine human powers of resistance, and perhaps the evidence of an experienced civil-defence officer like myself who in the course of his duties travelled from one burning town to another may contribute to a broader examination of the subject: the capacity for suffering and resistance under intensive bombing shown by a population when it is called upon to give its utmost.

The events under discussion are not so far in the past, but already it is getting difficult to recall fully the grim and gallant determination of those men and women who stood firm on the home front against everything the enemy bombers could do – and who still held fast even when (from the middle of 1943 onwards) the number of homeless increased by 250,000 to 300,000 a month; that is to say, people who had lost everything except the clothes they stood up in. A good deal has already been forgotten, pushed to some extent into the recesses of memory by new hardships. For the first post-war generation the events of those terrible days is nothing but a grim fairy story – the story of a thousand and one bombing nights.

What was demanded of men and women in those days, and the burdens they carried without breaking down, tend to be under-estimated in these calmer days. But it is still astonishing that the human organism, and in particular the human nerve system, could stand such enormous and ceaseless pressure without cracking.

The powers of resistance both of the individual and of the community proved very much greater than had been supposed; and the same was true of the simple will to live. Most of the men and women concerned were themselves astonished at what they proved able to stand, at what they were able to do, and on what unsuspected reserves they were able to draw to meet the emergency. Perhaps it is just that with the task God gives man the strength to perform it.

The basis from which the resistance of the German people drew its strength was made up of many factors.

The Civil Defence Organization

The Air Defence Law of 1935 called this organization into being and entrusted it with the defence of the urban population. Its plans were carefully thought out in advance and the financial and other means placed at its disposal were considerable. No one supposed then, any more than now, that complete protection would be possible, but it was believed that a reasonable measure of protection could be provided to cope with the effects of the kind of bombardment from the air which was then regarded as possible. Though active military preparations naturally had priority over civil defence in men, money and materials, nevertheless sufficient of all three were allotted to civil defence to afford some real protection and a good chance of survival.

At the same time the civilian population was given both theoretical and practical training to face the danger of bombing. Germany's civilians were therefore neither sur-

prised nor vastly shocked when after a certain amount of hesitation British Bomber Command started the air war with its first attack on West Germany in the night of 10th-11th May, 1940.

In West and North-West Germany the so-called 'drips and drabs' attacks of 1940-41 gradually got people used to the bombing and, so to speak, trained and strengthened their morale as the attack was slowly stepped up. For example, by the time the main air offensive began at a later stage, those civilians not directly engaged in production had already been sent away from the towns on a considerable scale. Those who remained behind were already trained and reasonably well prepared, so casualties were kept fairly low.

At the same time people gradually began to regard the bombing as something in the nature of sporadic acts of God and to adapt themselves to them. After all, people can get used to anything that happens repeatedly: volcanic eruptions, earthquakes, typhoons and floods. Thanks to the practical training of the civilian population and to the gradual introduction to bombing warfare, Germany's civil-defence organization successfully got through the first phase of the bombing.

The idea that the civilian population huddled together in the shelters in fear and trembling, waiting for each new attack is quite wrong – at least it certainly was in the first phase of the bombing. At the beginning of the main British air offensive Germany's towns were reasonably well prepared to withstand the attack, and there was certainly no 'end-of-the-world' atmosphere amongst the population.

The Civil Defence Problems

The idea of civil defence arose quite naturally between the wars under the increasing threat of air attack, and the governments of all European countries gave it their close attention, though certainly with considerable doubt and anxiety. For one thing, no one knew how civilians would react to bombing from the air, and there were even solemn warnings that anything of the sort would immediately cause panic and result in a revolution. And a more immediately important question was whether, and if so, to what extent the urban masses could be expected to co-operate in this new kind of national defence.

There was, after all, some reason to doubt whether the ordinary citizen of a modern big town would be ready and willing to join his fellows in self-defence as the old citizen volunteers had done in the towns of medieval Europe, because for many generations he and his like had been accustomed to look to the authorities for protection in any emergency. It was 'their' job and he had been accustomed to seeing 'them' carry it out. It was feared that the one-time readiness of the citizen to buckle down and do such things for himself might have died out for lack of use; and if it had, could it be reawakened? We know now that it was very successfully reawakened. In Germany this was largely due to the work of the Reich's Air Defence League and its willing helpers.

The success of civil defence in the first years of the war, say up to the spring of 1942, would have been impossible but for the psychological willingness of people to help themselves and band together to defend their lives and property.

Naturally the particular traits of the German character proved very useful here: the much praised, and much decried, love of order, developed into a high level of civil-defence discipline; the strong sense of duty which kept men and women at the work bench even under the most difficult circumstances; and a loathing of any form of wanton destruction.

Like the British people, who showed very similar qualities during their five-month ordeal, the German people got used to the constant presence of terrible danger with stout hearts and level heads. There was, of course, no way in which they could escape the ordeal, but at least they could make the best of it, and they did – even if they didn't always understand why they were called upon to bear such a burden.

Now this sort of behaviour is by no means a matter of course, and there were many examples of very different conduct during the war. For example, in the summer of 1940 – for fear of reprisals – the temperamental inhabitants of the South of France drove lorries on to the airfields from which British bombers were preparing to take off against Italian towns. And when the first bombing attacks were launched against Italy her no less temperamental population simply refused to stand the ordeal and fled helter-skelter from their factories.

In his book the Chief of British Bomber Command records '... the effect on Italian morale was enormous, and out of all proportion to the weight of the attack and to the extent of the damage'.

At his wit's end, Mussolini had to promise that he would organize the nightly evacuation of the factories, and even despite this the men and women concerned often took

matters into their own hands. And yet at the same time the population of Rome increased by a good million – much to the dismay of the authorities. In the same period the population of Berlin was reduced by a million and a half as the result of evacuation.

Incidentally, in this connection a strange phenomenon is of interest, and perhaps even of significance: if you trace back the theoretical origins of unrestricted or total bombing warfare you find that it first took root in the Latin countries (Douhet, Rougeron, Vauthier, etc.).

Civil defence, at first known in Germany as 'passive defence' as distinct from active military operations, seemed to involve one very real danger: it was feared that it would encourage an attitude of moral passivity. It was therefore a very good idea to give at least some sections of the civilian population a real opportunity for practical action when the time came. Although later on when the attacks became heavy the fire-fighting and improvised rescue operations of courageous men and women were rarely wholly successful, at least anything at all was better than sitting night after night in the shelters, wondering whether one's number was going to come up as the bombers droned overhead. Further, there is an often unsuspected urge in many people 'to live dangerously' and during the war – encouraged by shrewd propaganda – it found a very wide field on which it could indulge and prove itself.

One of the encouraging phenomena of this difficult period was the gallant readiness of men and women to go to the help of their neighbours; and their goodness and kindness to each other, despite their own troubles. It was a time in which

only the simplest and fundamental things were of any account. With the enemy droning overhead people felt that they were all in it together, and there was no room for anything but generous and warm-hearted humanity. With death so close at hand no man could wear a mask.

The members of these little communities, often made up of those men and women who lived in the same block of houses, or in the same street, felt themselves at one with their fellows. The narrowing of their outlook to their own immediate neighbourhood and the people in it was a great blessing and a source of strength; and it was perhaps this as much as anything which helped them to survive their ordeal without cracking. The ultimate natural unit is, of course, the family and it was often this smallest of all communities which was the only prop of human society. Under the terrible blows of that terror from the skies which deliberately aimed at the destruction of human solidarity, the bonds grew closer and the spirit of resistance stronger, and the family now buckled to and performed innumerable tasks which in normal times it had long since left to others. And by means of self-help it supplemented the often inadequate efforts of the authorities to provide protection and help for the victims. Where society and its institutions left gaps they were filled by the family.

The Citizen and the place he lives in

After our experience during the bombing we can afford to smile when we hear people from countries which were spared such horrors still talking about the 'rootlessness' of

the average inhabitant of a big town. In the old days people used to talk like that in Germany too, and some of us believed them. That sort of bogey leaves us indifferent nowadays, because we saw how millions of people first became really 'rootless' precisely because they lost their homes in the big towns, because their four walls collapsed around them, and their roots were laid bare. It was the destruction of the alleged cause of their 'rootlessness' which actually made them rootless.

For many years we had been told that big towns were mere colourless conglomerations of an over-organized technical civilization, and that the men and women unfortunate enough to have to live in them had long lost all real sense of 'home'. According to Spengler in his *Decline of the West* this destruction of any real feeling of being 'at home' which was caused by living in big towns created a gaping emptiness in which the rootless and resentful town dweller hated the town he lived in.

But when the real test came we discovered that the situation was very different: that fundamental urge of human beings to love the place in which they were born and brought up was seen to exist just as much in the big towns, and with unsuspected strength and vehemence. When the first big area conflagrations showed clearly that the authorities were not in a position to protect the urban population, and they fell back, on the ancient resort of any beleaguered city; get rid of the 'useless mouths' by evacuation, it was seen that these supposedly 'rootless' people were unwilling to abandon their homes even in circumstances of such extreme danger; and vigorous propaganda – often accompanied by compulsory

measures – was necessary before they could be persuaded to leave.

And amongst those who finally did go there were innumerable examples of home-sickness which was so strong that they returned to the places in which they had been born and brought up, and braved the bombs. And whenever streams of fugitives poured out of a big town as a result of heavy bombing, it was not long before the effects of shock had worn off and the opposite process set in.

Even in ruins, the towns were still their homes, and their magnetic attraction continued to operate strongly. Within less than a year 900,000 people were again living in the ruins of Hamburg, though it had been eighty per cent gutted. By their grim persistence they demonstrated that their town was still alive.

We can see something of the same sort again today, in times of peace; there is an obstinate resistance amongst the populations of our big towns to co-operation with authorities who are anxious to decentralize and thin out the built-up areas by shifting people and their families to 'new towns' in the rural areas.

The Will to Hang On

It is demonstrable that there is at least a theoretical connection between the hunger blockade of the First World War and the mass bombing offensive of the Second.

In a memorandum to his Minister of Aircraft Production on 8th July, 1940, Churchill insisted that although there could

be no effective hunger blockade in this war as there had been in the First World War, nevertheless there was a weapon which could just as effectively force the enemy to his knees, and that was a devastating and destructive air war waged by bombers from Britain carrying the battle into the very heart of Nazi Germany. This was the weapon to defeat the enemy; he could see no alternative.

Thus in the Second World War the bombing offensive was to play the same role as the hunger blockade had played in the First, causing Germany to collapse once again in exhaustion as she had collapsed towards the end of 1918.

But although the Allies certainly won the war, the new plan was a failure. It was not the weapon to defeat the enemy.

During the Second World War food supplies were, of course, restricted, but the same disastrous situation as had arisen during the First World War did not arise again, and according to Baade in his book *Brot für ganz Europa* (*Bread for the Whole of Europe*) there was sufficient food during the Second World War to provide the 350 million people of blockaded continental Europe with almost 3,000 calories a day each – though, of course, it was not always possible to distribute the available foodstuffs satisfactorily and uniformly. It was only during the last few chaotic weeks of the war that rations sank to the bare existence minimum of 1,800 calories a day.

This time the actual hunger period came after the war had ended, when as a result of the Morgenthau Plan the occupation powers prevented Germany from feeding herself for several years.

Despite its unprecedented weight and extent the bombing

offensive did not even remotely succeed in equalling the effects of the hunger blockade during the First World War, when starvation followed by epidemics undermined the national will to resist.

In 1918 indifference, unwillingness to go on, and resentment were incomparably greater than in 1945, when the will to hold out and win was still widespread amongst the German people. Propaganda to the effect that victory must be won if Germany were ever to replace what she had lost by the bombing was very cleverly plugged, and met with a good deal of acceptance. And the more and more complete the devastation became the easier it was for people to accept this view.

How could a ruined and defeated Germany ever hope to rebuild her shattered gutted towns?

A war insurance system such as existed in Britain during both world wars did not exist in Germany in either. But quite apart from material questions, the will to hold out remained unbroken even when it became clear that the prospects of victory were remote. More than one personal experience with people who had lost everything revealed the psychological situation in a quite moving fashion: there was an almost mystic belief that victory could be won by sheer sacrifice.

Civilians and the Wehrmacht

The mutual relationship between the civilian population and the Wehrmacht was fundamentally changed by the air offensive; there was now little distinction between the men

at the front and their families at home. Previously the general idea had been that the soldier went off to the front to defend his country, his home and his family, but in the Second World War the situation was rather different. The soldier still went off to the front to fight, and often to die, as before, but despite all his efforts his home, far away behind the lines, was now destroyed and his wife and children buried in the ruins. Sometimes indeed the situation which had formerly been normal was even reversed: there were often times when the civilians at home were in the front line and suffering more than the soldiers at the front, particularly when the latter happened to be on some quieter front.

The civilian population was tried to the utmost – every bit as much as the soldier in the fierce battles at the front. For example, it was not until July 1944 – on the Continent Peninsula during the invasion battles – that German troops were called upon to stand the concentrated attack of 700 heavy four-engined bombers, something which by that time the civilian population had already been doing for years.

Unquestionably the men at the front were very seriously affected by the knowledge that behind them town after town was going up in flames, and there were many signs which indicated that their fighting spirit was suffering in consequence. The military censorship of soldiers' letters during the war had every reason to know that it was the bombing which chiefly exercised the minds of the men at the front. The well-known *Briefe gefallene Studenten* (*Letters of Fallen Students*) are illuminating in this respect:

"The bombings worried us far more than the food short-

ages. We would much sooner have starved than have this constant anxiety about our homes and our families.' And again: 'The situation at the front is all right again but the air attacks on our home towns and on our wives and children are terrible.' Finally: 'A chap just back from leave tells us that Hanover has been practically wiped out – that's terrible!'

Incidentally, the enemy carefully studied the state of mind of the men at the front, and, according to *Pravda*, letters written home by German soldiers in the summer of 1942 contained three per cent of anxious inquiries about the bombing; by the autumn of 1943 the percentage had increased to forty-seven!

As the war went on the bombed civilian population became increasingly convinced that the Luftwaffe was leaving them in the lurch, and the less the unlucky Luftwaffe was able to do to protect them the more resentful this conviction became. Even after the first concentrated night attacks of the British preliminary air offensive it became clear how foolishly Goering had behaved when in a struggle for control with rival authorities he loaded the difficult and thankless task of civil defence on to the shoulders of an already overtaxed Luftwaffe instead of leaving it, as it was in all other countries, in the hands of the Ministry of the Interior. As a result of this greed for power the Luftwaffe found itself saddled with administrative tasks which were soon to prove extremely onerous. The Luftwaffe was organized for very different tasks; it had too little human contact, too little understanding for the feelings of civilians, and none at all for the need for human warmth in a world of misery and suffering.

In consequence the feelings on both sides remained cold and impersonal. And the abrupt military tone in which men and women were addressed was not calculated to establish a friendly, understanding relationship between the leaders and the led. The men and women who had to face the bombing at home could feel the cold and calculating atmosphere of the Headquarters bunker, whose occupants were only too obviously beginning to find the needs of the civilian population an increasingly greater nuisance the less they could do to alleviate them.

Hitler himself, who had occasionally shown signs of deep emotion when news was brought to him of the fate of this or that town, never once visited a bombed area. Finally he thought he had done enough to solve all problems when he took the responsibility for civil defence out of the hands of the Luftwaffe and handed it over to the National Socialist Party.

The attitude of the Generals and Field Marshals to the sufferings of the civilian population can be seen clearly enough from their subsequent memoirs. Listen to General von Tipperlskirch in his *History of the Second World War*:

'As painful as the personal and material losses may have been, from the standpoint of the prosecution of the war the bombing was not intolerable.'

And in his memoirs, *Soldier to the Last*, Field Marshal Kesselring makes a curt bow of appreciation to the steadfastness with which the British civilian population stood up to five months of bombing, but he doesn't waste a single word on the no less admirable steadfastness of the civilian population of Germany in the almost one-sided bombing war which followed.

The sufferings of Germany's men, women and children behind the lines did not bulk very large in the minds of the Field Marshals and of Generals. One could feel that their hearts were not moved.

This cool attitude can be seen very clearly in the frank comments of Dr. F. Hartlaub, who was in charge of the official log at the Headquarters of Supreme Command:

'Of course we know perfectly well what is happening, but frankly I don't know whether I can really appreciate it, really sympathetically experience it. We can see all the phases of the air war here. That's our job. There are a few days of bitter fighting when up to 3,000 enemy heavy bombers are engaged. Then comes a period of bad weather; the enemy pushes his ground organization a bit farther forward, and we work out a new plan for the night fighters. Then for a while the attacks are directed more against our oil plant than against the towns. But the details cause us a certain embarrassment; we can't use them. That sounds disagreeable perhaps, but it's true.'

The war they had to fight rarely gave the soldiers an opportunity of understanding the sufferings and needs of the civilian population. So long as the line held against all the attacks of the enemy the Wehrmacht tended to look on civil defence as a sort of humanitarian organization, as a sort of centrally organized neighbourly help to be called on in case of need.

The realization that civil defence is not a matter of secondary importance, but is just as important as the operations at the front is something which was forced on the authorities for the first time by harsh experience in the Second

World War. Let us hope it is a lesson that will never be forgotten.

Towards the end, when matters were growing serious, the Wehrmacht often drafted quite large forces from its own reserves into stricken towns to assist in the rescue work. These men did their duty efficiently and well, and they did what they could for those who could still be helped, but this side of their activities was never more than a secondary one.

The tendency to make the unfortunate Luftwaffe responsible for what was happening to the even more unfortunate civilian population was too tempting to be resisted, but, in fact, no one with any knowledge of the inordinate difficulties the Luftwaffe had to cope with could seriously accuse it of any dereliction of duty.

There was even less confidence in the anti-aircraft batteries; less confidence but also less resentment; people were even inclined to feel rather sorry for the gunners. It is quite true that at first their efforts were certainly very inadequate, and the evidence of their failure was often to be seen in the night sky with shells bursting harmlessly out of range like a firework display. But people realized that the difficulties were enormous, and that the gunners had been given a task which exceeded their capacity, a task which in all probability was impossible in the given stage of technical developments.

Then, as the situation at the front grew more and more difficult, battery after battery was withdrawn and sent to the front, with the result that at the worst possible time many towns which had at one time been defended now became practically open cities. Very often only obsolescent guns were left behind; sometimes they were even mere dummies.

Further, what guns there were were often served not by trained gunners but by schoolboys, prisoners of war, and industrial workers who gave part-time service. The searchlights were 'manned' by girls and so were the range-finders and computers. One anti-aircraft unit commander is said invariably to have solemnly addressed his subordinates as: 'Ladies and gentlemen, fellow workers, schoolboys and tovarishtchi!' Apocryphal or not, exaggerated or not, it is a reflection of the situation in the ranks of the anti-aircraft units towards the end.

But despite all the moaning about the feeble efforts of the ack-ack batteries, subsequent revelations showed that they were considerably more effective than had been supposed. During the main Allied air offensive, when U.S. bombers were attacking heavily-defended industrial objectives, about a quarter of the returning bombers were found to be so badly damaged by anti-aircraft fire that they had to be withdrawn for repair. This represented an additional drain of about 4,000 bombers a month. And about twenty thousand highly trained R.A.F. personnel were wounded as a result of ack-ack fire and night-fighter attack.

And at the very least, the tremendous cannonades set up by the ack-ack batteries, vigorously slinging whole munition dumps into the sky, did give the people down below the feeling that they had not been abandoned altogether, and this was probably the main value of the operation.

The Propaganda Anaesthetic

After the war it was freely recognized that German propaganda for home consumption, to counter enemy propaganda and to keep up the morale of the German people was 'the most effective and successful ever'. A favourite saying of Napoleon was that the value of a man's morale compared with his physical condition was as 3:1. The propaganda of Goebbels – and there was no other – understood this very well and acted accordingly. It contributed very considerably to the steadfastness of the German civilian population under the blows of bombing warfare.

The effect of this propaganda was enhanced by the increasing strength of the enemy air attack. The progressive destruction of whole districts, and even whole towns, provided a shattering object lesson with regard to the aims of the enemy. It is doubtful whether but for this devastating reality the German people would have held out to the end and been able to draw on such unsuspected reserves of strength. Right to the last the merciless daily bombardments, the Morgenthau Plan and the Allied demand for unconditional surrender provided Goebbels with his main source of material.

Goebbels' propaganda for holding out to the last ditch had three main arguments: that the new Greater German Reich was worth fighting for and worth dying for; that the government was doing its best to protect the civilian population, and that at least it would exact terrible reprisals; and, finally, that the only alternatives facing Germany were: victory or destruction.

In the early years of the war, when victory followed on

the heels of victory, it was not difficult to believe Goering's boastful assertion of the complete superiority of the Luftwaffe. After Lübeck the authorities took cover behind the war-time need for 'secrecy'; so that when the big British air offensive opened up the propaganda situation was more or less at sixes and sevens. As town after town was devastated the authorities had to admit at least part of the truth, but they always did so only after a good deal of delay, and then only with a tremendous to-do about the allegedly enormous losses suffered by the attacking bomber forces, which always exceeded our own air losses at least fourfold. After a certain amount of this it became clear that theoretically at least the enemy could really have no bombers left at all. But as he obviously had, appeals were now made to the spirit of self-sacrifice, confidence in victory and the duty of strict obedience. 'There is much suffering in the bombed areas, but even more determination.' Town after town was destroyed, and not a single gesture came from Hitler to bring comfort and encouragement to the men and women left alive in the ruins. Nevertheless the public image of Hitler as Father of his people, weighed down by his care for their welfare was still steadily plugged. It was not until 'the great monologue' was over, i.e. when the bombing finally ceased at the end of the war, and the German people came to after the propaganda anaesthetic, that most of them recognized how brutally they had been deceived, and how – even at a time when the war was already lost politically, militarily, scientifically and economically – their ideals and their virtues were still cynically exploited by clever propaganda.

It is more than likely that in the later stages of the war very

many people were no longer taken in by this propaganda, but they had no alternative, so they closed their minds. They may have suspected the truth, but they pushed it away from them; after all, they had to live on somehow – or hoped to – and there was nothing they could do about it. The authorities could therefore still maintain order even in chaos. This can certainly be fully understood only by someone who has experienced the full burden of war dictatorship and conflicting conscience borne by a thinking individual cut off from the outside world in an authoritarian State and as a member of a community reacting as one.

For the rest people did their best to cope with that terrible period; each in his own way, and according to his own temperament, character and nature. Everyone fell back on his own defence mechanisms and created his own psychological haven in which he could take refuge at least occasionally. And, finally, a merciful nature helped him keep his end up.

Human Temperaments in Bombing Warfare

The optimists were best off, particularly those who still managed to believe what they were told. In a confidence which was blinder than blind they were quite sure it would be all right in the end. Even when the situation was quite clearly absolutely hopeless they still vaguely believed that some sort of miracle would rescue them. There was the hope that the war would end in a saving compromise after all; that behind the scenes, and although military operations were still proceeding at full blast, negotiations were going on which

would make it unnecessary to capitulate unconditionally; that the Eastern and Western allies would fall out in the end and so save Germany. And then, of course, there was the cleverly encouraged belief in the new miracle weapons which were quite suddenly going to turn the tables.

And as for the pessimists, they were always inclined to be mistrustful, and so even in relatively good times they weren't happy. But they had to keep their feelings to themselves, because the Nazi régime was not prepared to tolerate any depression. During the war even the most cautious criticism was regarded as sabotage, and the slightest expression of doubt in the certainty of victory or in the absolute correctness of all the war-time measures of the government could be quite literally a capital crime. It is difficult to know how many people doubted, because they were all forced to keep silent. Only after the war was it possible to discover anything about the existence of oppositional groups. But one thing is certain: they were neither very strong nor very influential – the prevailing circumstances saw to that.

And then there were those who were just numbed. Thanks to its geographical situation, by the summer of 1942 the town of Emden had experienced 800 alerts. In all Cologne had 2,200 alerts and 252 raids. There were 214 attacks on Hamburg, and far more night alerts. Berlin had to suffer 450 raids, some of them very heavy indeed.

Nevertheless men and women bore the tremendous moral and physical burden involved, fought and worked for survival, and contributed to the survival of their town as a functioning unit. No matter how nerve-racking the heavy raids, the constant night alerts, the lack of sleep, and the tribulations of

every possible kind, they did not crack. Their feelings became numbed, they became indifferent to every happening, and the very enormity of what they had to stand – almost unimaginable nowadays – actually helped them to tolerate the intolerable. They no longer had strength enough to bemoan their lot. They even ceased to complain – it was useless.

Self pity had long ceased to have any point. The roof over their heads would collapse into the burning house sooner or later – because the hail of incendiaries was becoming heavier, because there was not enough water to fight the fires, and because men and women no longer had the strength and energy to fight them. And so people became more and more indifferent to their sufferings – and no longer afraid of anything.

In this respect I remember one of the many personal experiences of those days, and it was more than a casual incident on the unimportant fringe of the bombing terror, it indicated something very important. After a particularly heavy bombing night I witnessed a blustering attempt by a well-known Party leader – one of those brutal and ruthless types used to getting their way with a snarl – to rebuke a woman who was expressing her opinions. She turned to him fearlessly: 'You can throw me into gaol if you like,' she declared. 'At least I'd have a roof over my head there.' The retort was so logical and unanswerable that even the bullying satrap was silenced.

It was a warning example of the helplessness of the powerful towards their victims once a certain limit has been reached. The terror bombing was so monstrous at its height

that when ordinary men and women were at death's door they were too tired and exhausted to realize it clearly – or to care even if they did.

And then there were those who were emotionally petrified. Just as an excess of pain is relieved by unconsciousness so an excess of moral suffering leads to an analogous paralysis of the senses. Suffering detaches itself from the individual; it makes itself, so to speak, independent.

After a night of terror and horror in a burning town the survivors were often in an outward state of calm brought about by inner shock. Their faces still bore the marks of their experience, but they no longer felt it. It would seem that a certain depth of suffering no longer canvasses sympathy – the victim no longer feels sorry even for himself. This inborn tendency to cease reacting to an excess of suffering, whether by others or oneself, is a defensive mechanism which nature has mercifully given to man.

And throughout, the attitude of the population to the men who were bombing them and causing their sufferings remained astonishingly indifferent, and free of all personal feelings of anger and hatred. To curse and hate requires an inner energy which most people could in any case no longer summon up. You rarely heard people complaining about the devastation even when it was at its height, and when they did it was resignedly and never vehemently. They remained just even where – God knows! – they had every reason to be bitter.

The explanation of this extraordinary phenomenon is probably to be found in the readiness of men and women to regard a terrible catastrophe like a devastating air raid as

something beyond the bounds of human understanding, as something in the nature of an act of God. Conversely it would appear that the men who carried out the bombing felt no personal relationship of hatred to their victims. From a height of twenty-five thousand feet and more the people down below – if any thought at all were given to them – must have appeared as microscopic creatures with whom one had and could have no personal relationship.

Does the question of conscience arise at all for a man who releases a block-buster, unaimed, over a town filled with defenceless people? Does he wonder where it is going to explode? In a nursery, in an old people's home, in a hospital ward? Only very rarely have any of these men spoken frankly about the spiritual and psychological effects of their experiences; for example, Saint Exupery, who said he would rather be a gardener than a war pilot; and the German ace Colonel Baumbach, one of the most successful of Luftwaffe wartime pilots, whose experiences made him declare publicly that he hated bombing warfare and that whatever happened he would never drop another bomb as long as he lived.

The attitude towards the fighter-bomber pilots, the feared low flyers who deliberately went man-hunting with all the instincts of the butcher-bird, shooting down anything that moved in the fields and lanes, was very different. Human anger and indignation against such deliberate slaughter did arise, for under no circumstances could anyone regard that as a justifiable method of waging war. But even this anger was no relief, for it was impotent.

The Balance

The psychological state of the population in the devastated towns kept pace right to the last with the general development of the situation. What was it that kept men and women going? Glory, honour and enthusiasm had ceased to mean much even for the men at the front. And the colder conception of duty is not enough to explain the grim determination with which people hung on. No, what kept them on their feet was the desperate situation itself, the unavoidable and almost mechanical involvement of their whole lives in what was happening. There was just nothing else they could do. There was no way out. Flight? For a long time there had been nowhere to flee.

The civilian population bore the burden placed on it because no one offered any alternative.

It was the Casablanca Directive which first turned the war into a people's war. The increasingly ruthless bombing that went on long after the war had been militarily decided was the factor which welded the people together and kept them together to the end. The suffering caused by the devastation of Germany's towns was the cement which not only held them together but held them to a State for which they no longer felt any enthusiasm. And the catastrophe which descended on Dresden aroused a last desperate effort amongst the exhausted masses, for now it seemed clear to them as never before that their enemies were intent on the physical destruction of the German people. The blind savagery of the last few months of the war could mean nothing but a systematic attempt to wipe them out altogether. Both the

enemy leadership and their own had condemned them to the same fate.

The behaviour of the tortured, suffering, but still obedient civilian population now took on an unbelievable grandeur. Goebbels had always done his best to stress what he called the sacramental origin of the will to resist, but he was not far wrong when he now described the grim determination of the German civilian population as 'almost religious'. Ordinarily the soldiers, the men at the front, had been held up to the people as the shining example of determination and devotion to duty, but towards the end of the war it was the other way round: the Wehrmacht orders of the day now held up the civilian population, who still defied the bombing terror, as the shining example for the soldiers.

If I now praise the steadfastness and the virtues of Germany's civilian population under the bombing terror it is not in order to put a halo round their heads, or to claim any special glory for the German people. The history of bombing warfare is not something to look back on with pride, and for most Germans its memories are painful in the extreme. Apart from the self-sacrifice founded on a bitter error, no pride remains, only sadness.

It is Germany's tragedy that this tremendous example of bravery, self-sacrifice, determination and faith was wasted on something which was not worthy of it. Nevertheless, its grandeur cannot be disputed. But let no one suppose that this statement is an attempt at heroization.

It is true that many people let their arms sink in discouragement in face of the growing weight and persistence of the burden, and in face of the more and more ruthless powers

which beset them, but the astonishing thing is not that this happened sometimes, but that it did not happen more often and much earlier.

Even so, the great majority held out with unexampled self-sacrifice and did their duty to the last. Forced down to the very minimum of existence both physically and morally these people won the real triumph of humanity over inhumanity: by their indifference to their sufferings, by their coolness in adversity, by their self-sacrificing readiness to help others, and by their undaunted courage these men and women demonstrated a steadfastness which went beyond the bounds of human understanding.

The very worst the enemy could do was unable to break their morale. But that morale was independent of a passing form of government and drew its strength from that duty which each man owes to his country.

From the Other Side

INTERNATIONAL INVESTIGATIONS conducted after the war almost unanimously declare the strategic air war waged by the Allies to have been a failure – as witness quite recently the official British report on strategic bombing. In the following we propose to quote the judgements of only the better known and more prominent witnesses.

First of all the Bomber Chief himself, now Sir Arthur Harris: 'The idea that the main effect of bombing German industrial cities was to break the enemy's morale proved unsound; when we had destroyed almost all the larger industrial cities in Germany the civilian population remained apathetic.'

The report of the U.S. Morale Division, *The Effects of Strategic Bombing on German Morale*, has much the same disappointment to record when it points out that the anxiety and fear undoubtedly caused by the bombing did not have any very great influence on the more important and more practical side of Germany's morale, namely the willingness to surrender.

In *The Second World War*, Major-General Fuller says on page 229: 'Sixty-one German cities of 100,000 inhabitants or more, with a population of twenty-five million were bombed.

In spite of this the moral effect was the opposite of what Douhet and his followers had predicted. Instead of collapse being rapid it was painfully slow.' And on page 231 he says: 'As an experiment the strategic bombing of Germany up to the spring of 1944 was an extravagant failure. Instead of shortening the war, its costs in raw materials and industrial man-power, prolonged it.'

Another British military writer, Captain Cyril Falls, writes in *The Second World War* (p. 69): 'It was estimated in the winter that the industrial capacity of Germany had been reduced by twenty per cent. In the light of later information this has been shown to be a fantastic exaggeration.' And again on page 101: 'The Army was being starved for lack of air co-operation. The campaign in Greece had possibly, and that in Crete had certainly, been lost for this reason. Worse disasters still were in store for the end of the year when Japan entered the war. The risks taken with the Navy were even sharper and less justified.' And in a lecture delivered to international air-war experts called together by the International Red Cross in Geneva in April 1954 Captain Falls declared:

'The value of "area" or "blind" bombing in the Second World War was to my mind less than its costs and the effort it involved warranted. Cold statistics show that its effect on German war industry was far smaller than was claimed and popularly believed at the time. German war production did not drop seriously till the victory of the land forces in the west and in the east was already assured. Yet the advocates of mass bombing were not dismayed by these revelations. They replied to them by proclaiming that if they had had their

way the war could have been ended much more quickly. They did not stop to ask whether, if they had been allotted all the resources they demanded and these had been withdrawn from the armies, navies and tactical air forces, they would have had the fuel for their bombing attacks. They merely demanded a bigger share.'

On page 26 of *The Military and Political Consequences of Atomic Power*, Professor Blackett writes: 'The nightly bombing offensive of the R.A.F. was an attempt to exercise air power decisively without defeating the enemy air force and without winning air superiority over enemy territory first. This attempt failed. The later successes of the bombing offensive were made possible by the gradual winning of air superiority over Germany, and this was achieved in large measure by the destruction of enemy fighters in the American day raids. . . . In spite of the great development of air power, it is clear that Germany's defeat in the Second World War, as in the First, was brought about primarily by her huge losses in man-power and material incurred in the land battles, particularly on the Eastern Front.'

And on page 174 of *Unconditional Hatred*, Captain R. Grenfell comments: 'Strategic bombers as a means of bringing victory were a remarkable failure, and in a double sense. Not only did they not have the effect Mr. Churchill expected of them, but the very high priority accorded to bombers in Britain's scheme of war production inevitably meant the starving of the other arms and weapons of war, which all went short to a greater or lesser extent in order that a huge national effort to turn out thousands and thousands of bombers should not be impeded. The adverse effect of the

consequential delays was particularly felt in relation to coastal aircraft, so important in the war against U-boats, and to landing craft and equipment so essential for the deployment of military force against the enemy. By allowing these and most of the elements of a balanced war effort to be neglected for the benefit of one special weapon designed for direct attack on the enemy civil population, Mr. Churchill made a strategical error of the first magnitude, which good judges estimate to have prolonged the war perhaps by as much as a year.'

F. J. P. Veale, *Towards Barbarism*, carefully examines all the evidence relating to bombing warfare and comes to the very definite conclusion that it was not justified at the time and cannot be justified in retrospect. For him the whole dispute is summed up in one question only: How can we make sure that such a totally irresponsible thing will never happen again?

The Australian journalist and war correspondent Chester Wilmott also discusses the question in his book *The Struggle for Europe*, and from a practical angle he expresses his considered opinion that Germany's arms industry would have been materially damaged much earlier and much more seriously if instead of launching attacks against Germany's towns the R.A.F. had concentrated its attention on the systematic destruction of railway and other traffic targets.

The French writers P. Paquier and C. Postel write in their book *Bataille aérienne*:

'If we assume with the initiators and chief actors of the air terror that the massive bombing of the civilian population would break their morale and reduce them to a state of hopelessness which would make them refuse to take any active

part in the war, or would stir them to revolt against the Nazi régime, then the bombing war was a failure. However, when we consider its role in the preparation and successful carrying out of the invasion then we cannot talk of a failure. It is strange that this point of view is not taken into account by neutral and allied observers, or is regarded as secondary, although it reflects the basic ideas of the U.S. leadership.'

Professor Aron in *La guerre permanente*:

'Thus one gets the impression that the attack on Germany's towns contributed less to victory than to the intensification of post-war economic and social difficulties. In so far as the air attacks were confined to the destruction of definite industrial or traffic targets the effect was very much greater. It would seem that even in their own field the air strategists grossly miscalculated. But the statesmen of the democratic countries, who were civilians, should have been much more aware of their responsibility to our joint European tradition – as whose defenders they presented themselves.'

The Swiss air-war expert Dr. Th. Weber:

'The unrestricted air war waged against Germany neither broke the morale of the civilian population nor decisively influenced the German Government. Neither could it prevent industry from supplying the front with the necessary weapons and equipment. Thus – at least in so far as it was directed against Germany's towns – it was waged in the name of a false doctrine, and probably out of sheer vengefulness.'

The German General von Tippelskirch writes in his book *Geschichte des zweiten Weltkrieges (History of the Second World War)*:

'The terror attacks against the civilian population and the

destruction of our towns did not win victory or even bring it about more quickly. They had no military significance at all – not even in the widest sense of the term. In all probability the war would have been over sooner if the forces used for the destruction of our towns had been turned against military objectives.'

Dr. E. Spetzler, German jurist and expert on the legal aspects of air warfare, declares in *Luftkrieg und Menschlichkeit: (Air Warfare and Humanity)*:

'All in all the strategic air war waged by the Allies disproved the theories of Douhet. It was not until 1944 that the course of the war was hastened by air attack when systematic raids were made on a limited number of real military objectives. On the other hand, the generalized attacks on industry, not to mention area bombing and terror attacks, delayed the conclusion of the war, caused unnecessarily heavy losses to both sides and violated the existing laws of war, and they were thus not justified by any military necessity. In the end they even created the impression that military results were no longer their object.'

Against all these clearly unfavourable judgements expressed by reputable experts and historians, there is only one judgement which thinks that on the whole strategic bombing was worth while, whilst at the same time rejecting, though in a cautious form, the air terror; and that is *The United States Strategic Bombing Survey*, which insists that the Allied air arm did have a material effect on the war in Western Europe, though it also declares that, retrospectively considered, it might often have been used differently and perhaps with greater effect.

This survey was however conceived in the atmosphere of 1945 when there was still a tendency to regard the air offensive as a punitive expedition whose effects would be a salutary lesson for future aggressors.

On the other hand, the British official report on strategic bombing, published at a much later date and in a very different atmosphere, largely confirms the conclusions of this book: 'Strategic bombing was an expensive failure.'

CHAPTER FOURTEEN

Moral Resistance to the Air Terror

RIGHT FROM its beginnings in the Spanish civil war the new-type air terror was recognized as a catastrophe with unforeseeable results, and as a crime against the laws of man and nature which called for condemnation by all men of good will. Even whilst the Second World War was on, the increasing savagery of air warfare aroused disapproval and horror, at least amongst those sections of the belligerent peoples still capable of moral feelings. It was a disapproval which was not shared by the cold-blooded calculators who guided the political destinies of the people, or by their air strategist advisors.

Although during the war adverse criticism was not strong enough to have any material effect, and although the protests were neither loud nor persistent enough to curb the bombing terror, nevertheless they deserve to be placed on record for the benefit of post-war generations.

In April 1937, the small Basque town of Guernica, which lay far behind the lines, was ruthlessly flattened by bombers of the German Condor Legion flying under Franco's orders. A wave of fierce indignation arose throughout the whole democratic world at this first brutal act of terror from the skies, and Picasso was inspired to paint his famous mural

'Guernica' for the Paris World Exhibition. Fierce anger expresses itself in this great painting; every brush stroke seems guided by indignation at the cruel horror. Convulsive anger and indignation at this sudden glimpse of the future of our civilization created an artistic masterpiece which still deeply moves those who see it. Amongst the many other artistic and literary attempts to give us a similarly impressive menetekel against this first act of the world drama, hardly one approaches the power and force of Picasso's vast image of horror, which, in its artistic simplification, presents the life-destroying cruelty of modern warfare 'from above' as the absolute idea of destruction for destruction's sake.

The nearest approach was probably made by Hermann Kesten in his simple story *The Children of Guernica*, in which he used the evidence of children themselves to express the inexpressible. Altogether children are being drawn more and more into the centre of descriptions of the horror of air warfare. Their questions, their desires and their dreams are increasingly discussed. It is as though adults had given up bemoaning their own lot and asked for no more than sympathy with the sufferings of the children.

Madrid was the first big town to suffer bombing on a modern scale. In four weeks in October and November 1937 about a thousand people were killed and 3,000 injured, and several quarters of the town were severely damaged.

Here too the really shattering impression of this crime against morality and Western tradition lay not so much in the sheer physical horror of the thing, though a terrorist attack on a town from the air is horrible enough in all conscience, as in the uneasy knowledge that a new age had

dawned, the age of total, unrestricted air war, the age of total horror.

The news of these terrible happenings in Spain was suppressed in Germany, and hardly a soul knew anything about them, though the whole Western world was reacting with spontaneous horror and indignation. The name of Guernica became a symbol. There were as yet no practical standards of comparison, but the trembling earthquake of coming events could already be clearly felt.

Picasso's great outcry of indignation could just as well be called 'Coventry', or 'Hamburg', or 'Dresden' – or 'Hiroshima', since one and all were places chosen by the bombing terror for its worst excesses. It is clear that no moral resistance to air warfare of this kind could make itself heard in Germany under the iron heel of an authoritarian régime, but this does not mean that there were no such feelings.

The terror from the air aroused more horror than approval amongst all peoples, and where public opinion – in so far as such a thing could be said to exist under the dictatorship of war – was able to make itself felt it did not approve.

During the war voices were raised in Britain urging moderation, but the protests came from small and uninfluential groups, and they were not strong enough to have any effect.

The action taken by Pope Pius XII in the hope of stopping the slaughter and re-establishing the principle that the defenceless civilian population should not be deliberately attacked was supported in Britain by the 'Bombing Restriction Committee', which was a thorn in the side of the British Government right throughout the war because it constantly

recalled the undertaking given to the House of Commons that only definitely military objectives would be attacked, particularly in a leaflet entitled 'Stop bombing Civilians!' But unfortunately this high moral endeavour achieved no practical effect. The appeal of the Pope remained a monologue. The ears of the belligerent world were closed.

During the war the International Red Cross made various proposals for the humanization of strategic air warfare, including one for the establishment of neutral security zones, and immunity for certain hospital towns. The ruthless and cold-blooded Casablanca Directive, which finally gave the 'Bombers' a free hand met with some criticism in Britain, and the opposition was sufficiently strong to produce debates in the House of Commons which were at least embarrassing to the British Government.

The British War Cabinet even began to feel that its bombing policy required some public justification, and accordingly I. M. Spaight, a highly placed Civil Servant at the Air Ministry, attached to the War Cabinet in an advisory capacity, published a book entitled *Bombing Vindicated*, which is still of importance today. It was written, of course, during the war and was therefore inevitably influenced by the prevailing rage for destruction. Today it is regarded as the classic plea for the political and moral justification of unrestricted bombing warfare. It does its best to prove Britain's innocence, but not very convincingly. Because of Spaight's official position he must be regarded as the mouthpiece of the 'Bombers' in the British Air Ministry. Abroad he is regarded as the Machiavelli of unrestricted bombing warfare.

Like Machiavelli, Spaight, a prisoner of his own doctrine,

contends that in modern air warfare all that counts is success. For him the decision to sow death and destruction against thousand-year-old Western urban culture is 'splendid', and 'heroic', and 'self-sacrificing', and he seeks to cloak the sickening slaughter that ensued with a false aura of magnificence and dignity which it certainly did not possess.

It is perhaps significant that the upholders of unrestricted bombing have always keenly felt a need for justification, and occasionally this has produced grotesque results. What is one to say of the intellectual sterility which insists on calling the five years of total bombing warfare a Crusade! Memoir writers always have a striking attachment to this Crusade business, but applied to unrestricted bombing it is a very bad joke indeed. The idea of using a word with so many heroic associations is presumably to provide indiscriminate bombing with a respectable camouflage, and the bombers with a sop to their conscience.

When finally everything lay in ruins a new tendency began to make itself felt: the annihilating devastation of strategic air warfare was presented as the result of some supernatural wrath. The fact that in its most extreme form only Germany suffered was presented as a sort of judgement of God. The bombing terror was decked out as some sort of divine retribution. When the first atom bomb was dropped on Hiroshima the intellectual confusion took on even more grotesque forms.

Right throughout the conflict there were certainly humanitarian tendencies in Britain, and according to the evidence of the Nobel prize winner, Professor Blackett, and other writers, the British people were persistently deceived as to the real

facts of the case. Even as late as 11th March, 1943, when the indiscriminate offensive against Germany's towns was at its height, Britain's Air Minister replied to a question in the House of Commons with the specific assurance: 'No sir, only military targets are being bombed.'

Of course, the fact that in the last phase of the Battle of Britain the Luftwaffe did not confine its bombing attacks to airfields and similar military targets made it easier to suppress moral misgivings. During the various phases of the bombing war opinions were to some extent divided, but as far as public opinion was concerned it was in favour of the bombings. But the British are far too politically enlightened and too fair to be happy in the long run about an unequal, and, towards the end, almost one-sided, battle. Despite the deplorable attitude of certain high prelates who supported the war against women and children, considered in historical-theological terminology the bombing war as waged by those responsible represents Britain's great sin. And the question of how far this merciless war behind the lines turned in the last resort against the statesmen and air strategists who were responsible for it will probably always remain open.

One of the first victims of the hesitancy and confusion which arose in the minds of the British people, whose conscience is now ill at ease in face of the results of this new form of warfare and seeks some way out, was the Chief of Bomber Command himself. For four years, 'a record of longevity in one war-time operational command', he personified the spirit of ruthless aggression. But the man who had been praised as 'the Nelson of the air' now found himself the whipping boy of the bombing war. His personality was

suddenly the subject of such vehement dispute that he tendered his resignation immediately after the war and pointedly absented himself from the official victory celebrations. His name was also a noticeable omission from the Honours List, whilst other high-ranking colleagues in the R.A.F. saw themselves elevated to the Peerage. It was only years later, at the Coronation of the Queen, when Churchill was again Prime Minister, that Harris was belatedly made a Baronet. He then left Europe, but his memory is preserved in Europe's most shattering experiences.

We can only guess at the background of this strange neglect, but it provides food for thought when we learn that the names of 'the Few', the fighter pilots who lost their lives defending their country against the Luftwaffe bombers, are inscribed in Britain's fane of honour, but not the names of those who lost their lives serving Bomber Command. 'His dead are not dedicated in Westminster Abbey as are Dowding's dead. One knows not why.' (MacMillan p. 129.)

Today, the soldier is being progressively relegated to second place by the technician, but the odium of inhumanity still clings to him, whilst those who give him his orders remain in the background, play the philosopher and are accepted by the world as humane. But in January 1943, when the Casablanca Directive officially unleashed the war on Germany's civilian population, the Chief of Bomber Command was entitled to feel that the moral responsibility for the strategic bomber offensive had been taken from his shoulders.

Allowing for the fact that historical parallels should be drawn with caution, those who know their history will

hardly overlook certain all too obvious comparisons. Right down to the present day the soldier Tilly who destroyed Magdeburg in 1631 has remained the monster, whilst his principal Ferdinand II has gone scot free. And it was not the Roi de Soleil, Louis XIV, or his War Minister Louvois, who were execrated for devastating the smiling Palatinate, but Mélac, the simple soldier who was ordered to carry out the 1689 equivalent of the Casablanca Directive: '*Brûlez le Palatinate!*'

The really serious discussion of unrestricted air warfare began only after the war when the abolition of the military censorship made it possible to discover the real extent of the devastation. A clash then began between the defenders of the air terror and those who now condemned it, and the dispute is still going on today in a changed air strategic situation against the background of eventual nuclear destruction. It will probably die away only when mankind has succeeded in abolishing all weapons of mass destruction.

During the past fifteen years, partly because of the reserve imposed upon us by the situation itself, there has been very little objective criticism in Germany, and if the subject was discussed there was always a tendency to link up the terrible happenings with emotional ideas of guilt and atonement, crime and punishment. But the alleged guilt of Germany's bombing policy derived from such considerations is not objectively based. It culminates in the contention that if the Luftwaffe had not raided Coventry our own towns would still be standing.

But if we dispute this we are not thereby denying Germany's full measure of guilt for the events of those terrible

years, a view graphically expressed in Hans Carossa's poem 'Occidental Elegy', which was probably written under the impression of the first incendiary raid on Munich in September 1942:

*'Im Gnadenlosen suchten wir die Leuchte,
die uns den Weiterweg erhellen soll.
Und wundern uns, dass es noch tiefer finstert.
Selbst riefen wir die grauen Furienchöre,
die nun durch unsern Heimathimmel jagen,
Entsetzen streuend: Stadt um Stadt erliegt.'**

In the United States the demand for ruthless indiscriminate bombing to break the morale of the German people was received as uncritically as the rest of Roosevelt's policy. According to A. Baily in his book, *A Diplomatic History of the American People*, a public-opinion poll carried out after the publication of the Casablanca Directive showed that eighty-one out of a hundred people questioned approved of intensified air attacks on the civilian population: 'to undermine the morale of the German people and destroy their capacity for further resistance.'

After the war one of the first to raise his voice against the amoral character of America's bombing policy was Lindbergh, the hero of the first solo flight over the Atlantic, and a national figure in the United States. He had just returned

* In ruthlessness we sought the torch,
to light us on our further way.
Then wondered why the sky grew darker still.
Summoned up those bands of furies,
which race across the German skies,
Whilst town by town sinks into dust.

from a visit to Germany, 'the land of ruins'. But it was not until some time later when the first parties of tourists began to visit Germany on a large scale again that ordinary people from the other side of the Atlantic stood before the vast areas of ruins, shaking their heads in misgiving and asking: 'Was *this* necessary in order to deal with Hitler?'

The protests which now began to make themselves heard throughout the world amongst people whose consciences were moved by the evidence, naturally produced counter-arguments from those who had approved the bombings, and, like Harris and his friends, were not prepared to let themselves be treated as whipping boys and shoulder the responsibility for those apocalyptic years. A sentimental legend did arise according to which those pilots who had dropped the atom bombs subsequently suffered terrible remorse. One or two may have done, but certainly not all. In *J'ai vu Hiroshima*, Ferdinand Gigon reports a talk he had with two of the pilots responsible for dropping the atom bombs.

Lieutenant-Colonel Ferebee, who is now serving as an air officer with NATO, was asked why he didn't drop his bomb into the crater of Fujiyama instead of on Hiroshima, and is reported to have replied: 'My orders were clear and definite and I carried them out. And when I saw the devastated town later I had only one thought: that was a good job!' Lieutenant-Colonel Becham was questioned concerning the dropping of the second atom bomb on Nagasaki. He is said to have replied: 'What's past is past, and it's useless to discuss it any further. I don't see the slightest reason to regret what I did. Even after the mission I never experienced any feeling of guilt. Subsequent moral regrets are a luxury

which perhaps outsiders can allow themselves, but not the soldier in the field.'

Of all the opponents of strategic bombing Colonel Bardèche uses the plainest language. In his book, *Nuremberg ou la terre promise (Nuremberg or the Promised Land)*, he describes the relationship between the Nuremberg tribunal and the strategic bombing war as follows: 'The basis of the process was settled in advance: the enemy had to be wrong. The sight of the vast ruins had thrown the victors into a panic, and they were afraid. The enemy just had to be wrong – think of what the world would look like if he were not! How intolerably heavy the leaden weight of conscience would rest on us for all those towns we razed to the ground!' It is a voice crying out almost alone, but for that very reason it deserves not to be forgotten.

The Shadow of the Future

READING BETWEEN the lines of this book about the last bombing war there is involuntarily a second theme and one of great urgency today: nuclear fear and its consequences. To follow up this idea we must first return to the disastrous theories of Douhet, the point at which all the trouble began. From his doctrine the path leads straight to attacks on industry and attacks on closely built-up and thickly populated areas, taking in the terrible Casablanca Directive on the way and ending – so far – with Dresden and Hiroshima. And overhanging us all today is the appalling threat of the nuclear rocket.

The Basis of Bombing Doctrine

Douhetism is the doctrine developed and set out in *La guerra integral*, published soon after the First World War by the Fascist General Douhet, who contended that an enemy could be defeated primarily by air power. He was by no means the first to see the direction in which air power might develop. The South African statesman, General Jan Smuts, who was a member of the British War Cabinet during the First World War, drew up a report after the Zeppelin attacks on England,

and in particular after the first daylight raid on London by planes in 1917. In point of casualties and damage these were minor incidents which already belong to the legendary past today, but those experiences were responsible for a development whose results we have seen in our own day. As Smuts wrote: 'The day may not be far off when aerial operations with their devastation of enemy lands and destruction of industrial and populous centres on a vast scale may become the principal operations of war, to which the older forms of military and naval operations may become secondary and subordinate.' The conclusion which he drew for the future was that Britain should build up a powerful air force, and never allow herself to be outstripped in this respect by any other country.

But it was Douhet, 'the Schlieffen of the air', who became the internationally recognized protagonist of strategic air warfare. During the twenties and thirties his idea that a bombing war would be economical in lives and nevertheless prove decisive was subjected to various modifications, became more and more accepted, and was finally put into practise in the Second World War. Theoretically Douhet's doctrine culminated in the now historic Casablanca Directive.

The fact that a proper name was used for bombing warfare indicated that war technique had entered into a new phase, since it is no accident when a collective expression is adopted for any particular branch of 'the art of war'. Such expressions are deliberately adopted, or come about naturally, when a trend has reached a certain stage of development. The ideas begin to crystallize and press forward to their execution. Douhetism reached this stage in the air terror of the Second World War.

The unrestricted use of air power now consciously parted company with the previously acknowledged laws of humanity in war. The complicated origin of the idea that mass destruction would prove an economical means of waging war has not yet been fully understood. No doubt the thesis of Ludendorff and others that in total war there is no dividing line between politics and economics, or between civilian life and military action, contributed to the confusion and degeneration. Strategic air warfare against the non-combatant civilian population was probably the most important change in modern methods of warfare. It was positively revolutionary, and yet even now it has not penetrated very deep into the consciousness of mankind. The attempts at a critical analysis of the process are still in their early stages.

Ideologically the world has not yet fully grasped the whole momentous change. It has not yet properly understood exactly what happened to it. Sometimes one even gets the impression that men's minds are unconsciously suppressing the terrible realities in order to busy themselves zealously with secondary considerations. If this were not so then surely such a radical turning point in the history of war would have led to keen discussions far beyond the inner circle of air experts.

May 11, 1940, when the British War Cabinet decided to wage 'indiscriminate' bombing warfare against civilian objectives; the 'Blitz' of the German Luftwaffe against London and the Home Counties in the Autumn of 1940, and, above all, the notorious Casablanca Directive of January 1943 – these were all dates which cause a chill of horror.

The Casablanca Directive, the culmination of all previous theories of strategic air warfare, was perhaps the most fateful

decision adopted at high level throughout the war in Europe. It describes the aim of the Allied air offensive as follows:

'The destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people to the point where their capacity for armed resistance is fatally weakened.'

What had originally been a secondary idea – to wage air warfare in order to undermine the morale of the civilian population – was now raised to first place. In consequence the operations of the bombers made our age more barbarous than any in history. It is not easy to come across historical parallels to the decision which had this result. It would appear that really outstanding examples of mass destruction in the past were almost all the result of deliberate decision and careful planning, whereas the minor examples were usually spontaneous. We need not concern ourselves with individual outrages and atrocities, because such expressions of man's evil and destructive instincts are invariably horrible accompaniments of all wars.

But systematic destruction as deliberate terrorism is a very different and far more serious matter. It is carried out according to plan as a systematic military action. Its main aim is to break the morale of the enemy by terror and undermine his will to resist.

The third type is politico-economic destruction. In earlier times, before modern technical developments, the belligerent armies would destroy each other's crops, orchards, olive trees and vineyards; today they destroy each other's towns by bombing from the air. This kind of destruction is primarily of an economic nature, and a secondary thought behind it is

often that it will weaken the competition of the enemy on the world markets for years to come whilst correspondingly strengthening one's own position.

Which of us would not have been horrified at the destruction and cruelties of those earlier days, whilst at the same time consoling himself with the thought that such savagery did not belong to our own enlightened day? But now we have witnessed a repetition of its worst excesses and in an even more terrible form. It would seem that in war all these kinds of savagery are likely to be committed, irrespective of the particular stage of civilization or of the character of the peoples engaged – unless governments and peoples join together in a common will to prevent it. In our own day they reappeared in the form of strategic air warfare and they were largely responsible for determining the character of the Second World War.

In any case, what we once fondly believed, namely that the wars of antiquity and of the 'dark ages' were more cruel and brutal than modern war, is no longer tenable. In fact, the deliberate and systematic destruction of eighty of the most beautiful towns in Europe during the Second World War has no parallel in history, ancient or modern. Even the Thirty Years War, which certainly did a tremendous amount of destruction, was not so bad by comparison, though it offers us the destruction of Magdeburg as the nearest historical approach. Between 20,000 and 30,000 people were killed, a tremendous number for those days, and from that point of view the comparison might stand – except that when it became known it produced such a storm of protest and indignation throughout the whole Christian world that such a crime was never repeated – until our own day.

Despite its apparent triumphs, Douhet's doctrine soon showed that it was based on very shaky foundations. Many, one can even say most, of its daring hypotheses were subsequently proved false and were refuted by practical experience. From the beginning the error of Douhetism was that it developed an idea beyond the possibilities of technical realization, and when it was put into operation as a means of warfare it was found wanting.

A theory is correct when its assumptions are based on reality and there are no miscalculations in its development. The exaggerated expectations of those who adopted the new doctrine developed more and more into fantasy. But the absolutely necessary condition for any effective military policy is to keep the desired objectives within the bounds of practical possibility. In some countries – amongst sea powers rather than land powers – the ideological hypotheses of unrestricted strategic air warfare developed into the rigid doctrine of 'morale bombing', though its doubtfulness and the dangers it involved should have been readily visible. And in the upshot a new psychological factor was introduced into strategical considerations and the situation was made even more complicated.

When the bombing war against the civilian population began in May 1940 – hesitantly and gropingly at first – most of the problems involved could not be seen in anything like their entirety. The belligerents began their air terror without being at all clear in their minds as to the results of their action. Once the thing was let loose, they were carried along with it. The fact is that Douhet's doctrine never rested on any very clearly defined basis of proof. And those responsible

for unleashing unrestricted bombing had not previously thought out what effect this 'morale bombing' was likely to have on the conduct of the war.

When the war broke out, neither side had any very reliable information about worthwhile targets in enemy territory, though, in fact, both sides had made secret – and illegal – reconnaissance flights. However, from the middle of the twenties the R.A.F. Plans Branch had been compiling a list of the most important industrial objectives in Germany. And, according to R. G. Alexander, when the United States entered the war there was a ready-made list of 124 main targets, consisting chiefly of power stations, railway and other transport objectives, shipyards, and synthetic-oil plant. There was also a list of thirty aircraft factories. Both in Britain and in the United States details had also been worked out concerning the use of the then available bomber strength in relation to these targets. This was done as early as 1932, but that was about all. None of the available plans was based on any practical experience, of course; and the resources for a large-scale air offensive were just not available. The R.A.F. had a certain amount of experience of colonial bombing, bringing recalcitrant tribes to heel and so on, but its value was greatly exaggerated and in the upshot it proved grossly misleading.

A good example of R.A.F. thought on the subject is provided in a lecture on air strategy by Wing Commander C. H. K. Edmonds published in the *Journal of the Royal United Services Institution* in May 1934: 'Just as in small wars our continuous bombing made the tribe's life intolerable and brought it to heel, so in the case of the big war our object is to destroy the enemy's national morale – we must make him

feel that life has become so impossible that he prefers to accept peace on our terms. All peoples, whether civilized or savage, are believed to pass through three stages when they are continuously bombed. The first is considerable fear, possibly panic. The second is indifference . . . The third is weariness.'

This was only one of the many half-baked theories you could read between the wars in all the air force magazines of the great powers. But half-baked or not, such views led straight to total air warfare and found their culmination in the Casablanca Directive. They all made the same mistake of over-estimating the psychological advantage of the attacker and underestimating the resources of the defence.

Naïvely confident in the incalculable the belligerents slid into air warfare with morally doubtful objectives. But once the air war was unleashed the thought pattern of those who waged it followed its own logic. The national existence of the enemy was to be broken not only militarily but economically and morally as well. Failure was the inevitable result.

End of an Illusion

The most important fact to be recorded is that the air terror did not shorten the war, and, indeed, exercised very little effect on its duration. Now and again its aim may have seemed almost within grasp, but this was an illusion; it never really was.

Enemy morale was not broken by the air terror; if anything it was strengthened. The war was not shortened; if anything it was lengthened. The British people did not crack under the 'Blitz', and the German people did not show the

white flag under the Allied counter-offensive, though it was probably something like twenty-eight times as heavy.

The instinct of self-preservation and the will to live proved far too powerful for the politicians and their air strategists, who were very ignorant of modern mass psychology.

Today most authorities regard 'morale bombing' as it was grotesquely called, as a failure. The terroristic intention, based on the idea of the hunger blockade during the First World War, was not achieved. Terror bombing did not result in mass panic and it did not have any material effect on the morale of the civilian population in the sense of persuading them to abandon their resistance and surrender. And without that the destruction of Germany's towns had no sense at all. It is one of the most astonishing and at the same time impressive facts of modern history that mass air terror did not break the morale of the peoples subjected to it.

But unrestricted air warfare proved just as much a failure as a means of bringing economic life to a standstill. In this respect too the hopes of its advocates were not fulfilled. Allied air power ultimately attained a strategic effect not by terror but by the direct, close support it afforded the invasion armies, and by dislocating Germany's transport and traffic system, which was vital for the continuation of the war.

The idea that strategic air warfare would be economical in man-power was also proved false. The Luftwaffe was the first to pay dearly for the idea that a war could be won on the cheap by a bomber force carrying out strategic tasks. The Battle of Britain involved it in such heavy losses in both personnel and material that it never quite recovered. And during their bombing offensive in Europe the allies lost

9,000 planes and 158,000 trained men, more than the total losses of the invading armies during the re-conquest of Europe – 158 men of the victorious British fleet died at the decisive battle of Trafalgar. How very far removed from the ideal of this classic sea engagement, and on what a far vaster scale was the bombing war!

The Anglo-American air offensive throughout the war certainly contributed to Germany's defeat, but it did not make a direct military attack with land forces unnecessary. In the end the Allies had to fight their way back into Europe and win the decision by conquering enemy territory. It was the infantry, slowly fighting their way into Germany from the West and the East, that won the war.

The determined upholders of the air terror have never been prepared to admit the obvious disproportion between the men and material it cost and the results it achieved. Even now the high priests of strategic bombing are not prepared to admit that their beloved theories have been exploded. But their obstinate persistence in believing that the bombing war is economical is a dangerous illusion, and it can still do a lot of damage unless it is finally abandoned. It may be true that the atom bombs dropped on Japan shortened the war in the Pacific a little, but the war was already decided before those bombs were dropped. All the same it shows a deplorable lack of humanity when some Americans still contend that the slaughter of 120,000 civilians was justified if it saved the lives of a relatively few soldiers in the field.

The only possible justification of Douhet's doctrine is the one it claims itself: namely that it can decide wars and save both men and material. But the practical facts of experience

have disproved these claims over and over again. It is high time that the whole conception should be condemned and abandoned as utterly false, and that the general public should be informed of the real truth and the practical facts of the case. Douhetism might have pleaded some historical justification if it had succeeded in practice in attaining what it had boastfully promised to attain in theory. But it has done nothing of the sort. When war doctrines prove to be as empty as a rotten nut, as Douhetism has done, then those who realize this and seek to make it clear to the rest of the world are doing a service to historical truth and making a valuable contribution to the great questions of our time.

Civil Defence today

In our own day with the threat of nuclear destruction hanging over all peoples, standards of comparison have changed, but not the fundamental relationship of attack and defence. In Dresden and Hiroshima the spheres of conventional and modern air technique overlapped, and as history is still the best teacher for politics it would be as well to link up the future with the past here too and draw the appropriate conclusions from the history of air warfare to date.

The most important and lasting conclusion is, or should be, that the basic idea of air terror, to which air strategy unfortunately succumbed, is false and should be abandoned altogether. In view of the clear failure of the first total bombing war it is astonishing that the persistent upholders of Douhetism can still confidently prophesy a better result

for a modern strategic air war waged with nuclear weapons. Amongst all the objections which have so far been put forward the most convincing is that in the best case it can be a 'broken-back war', which will then be fought out with such conventional forces as remain in being, dragging itself along painfully to the final and ultimate ruin of all the peoples engaged in it. The sufferings and misery of the civilian population in such an event are beyond the imagination of man to picture.

In the meantime one question obstinately demands an answer: will world opinion continue to uphold the inhuman methods of warfare represented by terror from the air?

The nuclear anxiety that hangs over us all today goes back to the thought pattern of Douhetism. Here is the root of the trouble. But at the same time it is a problem of sheer humanity, and people all over the world must face it. The fear that the terror from the skies may return runs through the whole of our modern world like a powerful contrapuntal theme, and forces all governments to face the problems it raises.

In all countries responsible governments are already engaged in planning such protective measures as seem best suited to counter the effects of modern air power, both conventional and nuclear, and putting them into operation by stages. Civil-Defence measures are an integral part of any defensive programme today. As a result of the experiences gained in both world wars it is now generally realized that even the strongest military power needs a carefully prepared civil-defence organization in addition to its active military and air defences. It is even beginning to look as though governments are prepared to let such organizations have all they need to make themselves effective. The main object of

all air defensive measures nowadays is to keep the home-front going as the backbone of the fighting organization at the front. The civil-defence law passed by the German Federal Republic in October 1957 is appropriately entitled: 'First Law concerning Measures for the Defence of the Civilian Population.'

Modern civil defence affects almost all aspects of national life, and it is understandable that responsible governments should now take this all-important and at the same time extremely difficult task very seriously indeed. Some idea of its complicated nature can be seen from the fact that it is not only political and military, but also scientific, technical, economic, financial, organizational and psychological.

And ultimately it is one of the most important moral problems of our age.

Such a complex of moral and ethical problems is involved, and such a high level of inner confidence is necessary, that the swift and complete all-embracing civil-defence plan that so many people demand, is, though highly desirable, not immediately possible because it presupposes a full understanding of all the factors involved, and this has certainly not been attained everywhere as yet.

The general preponderance of technical factors in modern life has inevitably resulted in priority for the technical and organizational aspects of present-day civil defence. In all national-defence programmes today it is obvious that most of the measures taken to protect the civilian population relate to the technical aspects of the problem.

In the first post-war years there was a tendency to seek for some simple and easy solution, and the question of inter-

nationally recognized protective zones was raised again, only to prove a fantasy. Then came the building of shelters. The idea was to allay the nuclear anxiety of the civilian population and meet its demand for personal security. The building of shelters began with such slogans as 'A people underground!' The building of shelters now began to play much the same role as anti-gas measures had played in some countries in the years between the wars. Of late the shelter idea has lost a good deal of its initial attraction, and for a very good reason. And as the length of the warning period becomes shorter and shorter, and threatens to become non-existent for all practical purposes, critical voices are attacking the whole idea of safety underground. Now the building of underground shelters is important *and* necessary, and it is beginning to look as though the policy has been saved from rushing off in the wrong direction.

Primary importance in the battle of ideas to prevent, or at least curb, future air terror must go to the efforts to secure international agreements to protect the civilian population in air warfare as they are already protected by such agreements regulating land and sea warfare. Unfortunately the practical results of these efforts have not kept pace with the development of military technique.

There are already certain international agreements and obligations in force with regard to air warfare, but they are so inadequate as to be practically ineffective. The few regulations laid down in agreements drawn up in the distant and now no longer applicable past are so vague that they do not even answer the all-important question: is the unrestricted bombing non-military objectives against the laws of war or not?

This uncertain situation naturally causes general misgiving and there is a growing demand for the promulgation of international air law to cover the dangers inherent in nuclear warfare and thus put an end to the present period of 'international lawlessness'. The longer the uncertainty is allowed to persist the greater will public anxiety become. Modern society is becoming increasingly aware of its moral and historical right to condemn air terrorism as an affront to its whole civil outlook. Humanitarian and pacifist circles take the lead here, and they feel that they are making a valuable contribution to the struggle for an international agreement to protect the civilian population against air warfare, but, in fact, so far they have done little more than confuse the situation. Their idealism tends to keep their heads in the clouds, and their ideas as to what should be done rarely bear much relation to practical possibilities.

To condemn the moral degeneration of air warfare is by no means the same as doing something practical about it. More effective means are necessary; for example, the efforts of Coudenhove to find a realistic compromise between the intolerable situation created by the constant threat of war and the eternal dream of peace. He proposes the conclusion of a fifty-year world armistice. Now one thing is quite certain, and no serious discussion of the problems of air warfare may ignore it: the potentialities of air warfare will be exploited by people guided by practical strategic considerations and not by moral ideas. The work of destruction they will be called upon to perform will be based on cold calculation and ordered by statesmen and strategists, who are, normally speaking, not guided by any other considerations than those of practical politics.

The efforts of the International Red Cross to secure international agreement are of much greater practical importance and promise greater success. Apart from the idealistic motives behind its activity the International Red Cross already plays a very important practical role in the lives of modern peoples, and we have to thank it for those few international agreements which still do effectively protect the civilian population in time of war.

A little while ago the International Red Cross approached its eighty-five affiliated member countries with a new proposal drawn up after years of careful discussion, containing new and up-to-date 'Draft Proposals to restrict the dangers incurred by the Civilian Population in War-time' and asking for their comments and practical co-operation. We may perhaps reasonably hope that this condemnation of air terror, like all earlier similar actions of the Red Cross, will ultimately compel all governments to accept an internationally valid air law.

Nothing done by any government against the evil influence of air terror on military strategy so far can compare with this semi-private, officious initiative. Those few official attempts which have been made lack the practical determination shown by the Red Cross. After all, the task of official bodies is primarily one of information and organization.

If not out of idealism and humanity, then at least as a matter of practical politics, all peoples threatened by bombing, and their governments, should get together in a determined effort to wipe out the conception of air terror as a means of modern warfare. It is time that the fatal error which lies behind the whole idea should be publicly admitted and

condemned before the world gets used to accepting air terror as a permanent concomitant of war.

Many people are intimidated by the extent and difficulty of the task. They fail to recognize that modern civil defence is primarily a matter of morale and principles, and not merely a technical problem. And in fact in a period in which military technique has become so powerful that once war has begun it takes charge, only the mind of man can save us. It is our last hope. As Albert Schweitzer said a little while ago in a somewhat similar context:

'The mind of man has a tremendous power to change material things.'

The present situation in which air warfare threatens to destroy us all was originally the product of men's minds. The mind of man must now find a way out of the danger. We must do what is to be done now, whilst there is still time, whilst the balance of terror still maintains the unwritten agreement not to bomb.

Incidentally, we can exercise very little, if any, direct influence on whether the bombing terror comes again or not. All we can do is to wait, so let us at least use the time of waiting to work with determination for the humanization of bombing war should it ever come again. Such efforts are far from hopeless.

All forms of war are temporary, and the air terror need not be regarded as part and parcel of an unchanging order of things.

The immunity of the defenceless, non-combatant civilian population must once again become our supreme law, and our political creed.

Conclusion

MORE THAN once it has been pointed out in this book that historical investigations into the air war can have a practical purpose and produce a useful result only if they are related both to the present and the future. Only an objective and unprejudiced analysis of the strategic bombing operations of the Second World War can lead us to any approximately accurate conclusions for our present nuclear age.

In conclusion therefore let us take a summary glance at the most important factors as they present themselves to us in retrospect.

1. To have recourse to indiscriminate bombing in any future war would lead with absolute certainty to the annihilation of a very large part of the human race, irrespective of whether the war began with any such objective or not.

2. When the Allies adopted the indiscriminate bombing of the civilian population in the Second World War they had little or no reason to fear effective reprisals on the part of the Axis powers. The situation in any new war will be very different. Each side will be in possession of nuclear weapons and the ability to deliver them. And this gives each side pause, from which we may assume that Britain and the United States would hardly have waged indiscriminate bombing warfare if they had had good reason to fear equally effective reprisals.

3. In the present stage of military technique a new strategic air war could not be effective without the use of nuclear weapons. In any future total war an attacker wishing to destroy the material and moral resources of the enemy would

necessarily have to use nuclear weapons against his built-up residential and industrial territory in the interior. In the given circumstances it is, of course, unlikely that any government would again deliberately adopt such an objective. And certainly not if it first considered the likelihood of massive reprisals on the part of the enemy, or even its own responsibility towards civilization.

4. Strategic air warfare inevitably gets out of hand in the end no matter what good intentions there may have been in the first place to limit its objectives. The inevitable result of any attempt to win a war by such means can only end in indiscriminate terrorism. Today any prospective war lords can hardly harbour the illusion that they would be in a position to control the terrorism of total warfare once it started. War as it presents itself to us today would leave those who attempted to wage it very little room for manoeuvre. The forms it would take and the phenomena that would accompany it are beyond human prediction and therefore also beyond individual decisions.

5. Once air terror starts it leads to a progressive degeneration of conduct, and the already inadequate protection of the non-combatant civilian population, men, women and children, would become altogether illusory. The result would be the destruction not only of the social organism but of whole nations.

6. It is now our business to draw the necessary practical conclusions from these indisputable facts.

Appendix

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Appendix

TABLE NO. 12

Total weight of bombs dropped by the Anglo-American strategic bomber force in Europe in 1,440,000 individual bomber (and 2,680,000 fighter) missions:

	<i>Tons</i>	<i>per cent</i>
On Germany	1,350,000	50.5
„ France	590,000	21.7
„ Italy	370,000	13.7
„ Austria and the Balkans	180,000	6.7
„ other objectives	200,000	7.4

TABLE NO. 13

Bomb tonnage dropped on Germany in the six Years of War

1940	10,000 tons
1941	30,000 „
1942	40,000 „
1943	120,000 „
1944	650,000 „
1945	500,000 „

Total (according to
Blackett) 1,350,000 tons

Of which the R.A.F. dropped 955,000 tons and
the U.S.A.F. 395,000 „

In 389,809 bombing sorties the R.A.F. dropped on Germany:

Towns 430,747 tons or forty-six per cent (including
196,335 tons of incendiaries)
Industrial targets 153,585 tons, or 15 per cent
Other targets 380,712 tons, or 39 per cent
(According to Harris)

According to the U.S. Strategic Bombing Survey, the U.S.A.F. dropped 80,000 tons on Germany's towns, so, taking the two together, a total of 510,747 tons of bombs was dropped throughout the war on urban Germany.

TABLE NO. 14

Bombing and other casualties in Great Britain during the Second World War (according to T. H. O'Brien in *Civil Defence*).

Official statistics give a total of 146,777 killed, injured and missing civilian casualties: 67,698 men; 63,721 women, and 15,358 children and young people under the age of sixteen. The casualties were caused as follows:

	<i>Killed</i>	<i>Injured</i>	<i>Total</i>
Bombing	51,509	61,423	112,932
V.1	6,184	17,981	24,165
V.2	2,754	6,523	9,277
Long-range Bombardment	148	255	403

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